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RICINUS COMMUNIS.

Analysis of the leaves of the plant.

By E. S. WAYNE.

Having observed a crystalline deposit in the fluid extract of the leaves of the *Ricinus communis*, which preparation I have made for several years past from the leaves of the plants grown in this vicinity, and which has been used by several of our physicians as a galactopoietic agent with satisfactory effect, and having a desire to know what this substance was, induced me to make the following analysis of it, and to extend my researches further.

This crystalline deposit above mentioned had the appearance of a mass of colorless, prismatic crystals, imbedded, more or less, in a mass of chlorophyll, which had also separated from the fluid extract. A portion of the deposit was removed for examination, and was treated with alcohol; the crystals were left undissolved. Water was then tried as a solvent, in which they dissolved, and the solution upon concentrating deposited long prismatic crystals, which were found, upon examination, to be nitrate of potassium.

This fall, in making another quantity of the fluid extract, which required filtration to separate a quantity of chlorophyll deposited, I noticed that the greenish mass on the filter was glistening with crystals, and, upon treating some with water, obtained from it a large quantity of nitrate of potassium.

The presence of it in this mass was evidence that the salt existed as such in the leaves of the plant, which was also shown to be the case during the combustion of leaves and stems, they burning with scintillation and decrepitation almost like nitre paper.

Becoming interested in the subject, I was tempted to extend my researches, and accordingly submitted the leaves to a careful analysis for the presence of a proximate principle, and the analysis of the ash

of the plant. Analysis of the leaves failed to show the presence of any substance having the properties of an alkaloid, but proved that they did contain a proximate principle, crystallizing in square prisms and tables.

This substance was obtained by the following process: The powdered leaves were exhausted by percolation with dilute alcohol, and the percolate evaporated in a water-bath to expel the alcohol and separate chlorophyll and resin; these were separated by filtering. The filtrate was of a dark brown color. To it was added moist hydrated oxide of lead, and the mixture repeatedly shaken during the day; by this treatment the tannic acid present and a large portion of the coloring matter was removed. The solution filtered from the oxide of lead was of a pale amber color; this was then evaporated to a syrupy consistence. About one ounce of extract was left, which was exhausted with eight ounces of alcohol, and the alcoholic solution set aside for spontaneous evaporation. As the alcohol evaporated, a crystalline substance commenced to form, and from the extract above mentioned, from one pound avoirdupois of the leaves, about 60 grains of the substance was obtained of a pale yellow color, which was dissolved in alcohol, and the solution treated with purified animal charcoal. The solution left to spontaneous evaporation deposited the substance in colorless crystals, prismatic and tabular in form.

The portion of the extract insoluble in alcohol was tested for glucose, but none found present.

The crystalline substance was then submitted to the following tests:

Concent. sulphuric acid: No change cold or by heating; by heat it dissolved to a colorless solution, which, upon being diluted with water, deposited it again as a white pulverent mass.

Nitric acid: No change.

Hydrochloric acid: No change.

Sulphuric acid and bichromate of potassium: After standing some time a green color.

The hydrochloric acid solution, upon the addition of solution of chloride mercury, formed a white precipitate.

Heated with potash, ammonia was given off.

Heated upon platina foil it fuses, and, upon further heating, it ignites and burns with a sooty flame.

Heated in a glass tube, it fuses, volatilizes and condenses in a crystalline form in the cool portion of the tube.

Ricinus Communis.



The fused mass, upon cooling, forms a mass having a radiated crystalline appearance. It is soluble in alcohol and water.

Taste bitter, resembling that of wild cherry bark when chewed.

From the above behavior with reagents and its crystalline form, it is evident that the substance obtained from the leaves is identical with that obtained by Prof. Tuson from castor seeds, and named by him Ricinin.*

From experiments made with the substance from the leaves, it is evident that it has no claims to be called an alkaloid, as it has no action on litmus paper, and solution of iodohydrargyrate of potassium gives no precipitate with it. Yet it contains nitrogen, as proven by the production of ammonia when heated with potash.

All of the tests made with the substance from the leaves compare with those of Ricinin from seeds.

The analysis of the plant is an interesting one, showing that a peculiar proximate principle exists in all parts of it, the same as found in the seeds. Also that the leaves contain a large percentage of nitrate of potassium, and in this respect equal to that of tobacco.

An analysis of the ash of the leaves shows that they are very rich, both in alkalies and phosphoric acid.

500 grains of the leaves were incinerated, which required some manipulation, as the ash was found to be readily fusible, and perfect combustion consequently impossible; but by charring the mass only, and then dissolving out the soluble portion with water, combustion was accomplished. 120 grains of ash = 24 per cent., was obtained, the analysis of which gave the following results:—

Lime,	33.40
Magnesia,	6.20
Potash,	27.15
Soda,	2.12
Peroxide of iron,	.70
Phosphoric acid,	6.68
Sulphuric acid,	2.90
Chlorine,	1.63
Carbonic acid,	16.20
Silica and sand,	2.41
Loss,	.61

* American Journal of Pharmacy, 1864, p. 423.



From the above, when the size of the plant, its luxuriant growth, etc., are taken into consideration, the culture of it must be a very exhausting one upon the soil, the fertility of which must be rapidly decreased by the drain of potash and phosphoric acid. Whether it is the custom to restore to it the stalks and leaves after the crop of seed has been gathered, I do not know; but they should be, and thus by their decay restore these again to it: or that they be burnt and the ash scattered broadcast upon the land from which the plants have been taken.

Cincinnati, February, 1874.

JERVIA IN VERATRUM VIRIDE.

BY CHAS. L. MITCHELL.

Since the discovery and isolation of two alkaloids in *Veratrum viride* by Mr. Charles Bullock in 1865, no additional researches seem to have been made. Simon obtained jervia from *Veratrum album* some ten or fifteen years ago, but notwithstanding the fact that *Veratrum viride* is so similar in almost every respect, up to this date I can find no record of any attempt having been made to prove the presence of jervia in the latter root.

While recently preparing specimens of the *Veratrum viride* alkaloids according to the process given by Mr. Bullock, my attention was drawn to the circumstance, that when the precipitate produced in the acetic solution by sodium carbonate was treated with warm diluted sulphuric acid, a considerable amount of a granular, whitish powder separated on cooling. I at first supposed it was sulphate of calcium, but a closer examination revealed the fact that it was of organic composition, and after several different trials, I succeeded in proving it to be an alkaloid identical with the jervia of Simon. It may be obtained in its pure form by the following process:

Veratrum viride finely powdered is thoroughly exhausted with stronger alcohol, the tincture distilled to a small bulk, acidulated with acetic acid and precipitated in water. The resin is then separated by filtration from the aqueous solution of the alkaloids and the filtrate concentrated by evaporation and rendered strongly alkaline with solution of carbonate of sodium. The precipitate thus obtained is

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drained, dried, boiled with strong alcohol until nothing more is taken up, the alcoholic solution evaporated to dryness and digested in very dilute sulphuric acid.

The granular powder which deposits on cooling is sulphate of jervia. This is separated, well washed and drained, and then boiled for some time with a strong solution of carbonate of sodium. By this treatment the sulphate of jervia at first formed is decomposed, the jervia separating as a granular powder, which is washed until free from alkali, dissolved in acetic acid, precipitated with ammonia, well washed and dried.

Jervia thus obtained is a light, white powder, capable of crystallizing from an alcoholic solution, tasteless, inodorous and of a feebly alkaline reaction. It is insoluble in water, but very soluble in boiling alcohol, from which it is almost entirely deposited, on cooling, in white flakes. It is freely soluble in chloroform, but is only slightly soluble in benzin. With acetic and phosphoric acids it forms very soluble salts; with sulphuric, hydrochloric and nitric acids it yields salts, sparingly soluble in alcohol and water, and precipitated from the more soluble acetate and phosphate.

Potassa, soda and ammonia precipitate jervia from its solutions in white, rather gelatinous flakes, insoluble in an excess of the precipitant. With reagents it gives the following reactions: Perchloride of gold, curdy, yellow precipitate; sulphocyanide of potassium, white precipitate; bichloride of platinum, granular, yellow precipitate; iodohydrargyrate of potassium, curdy, white precipitate.

The most characteristic test for jervia is its reaction with sulphuric acid. When a minute fragment of it is moistened on a glass slide with a drop of concentrated sulphuric acid it immediately changes, first to a straw yellow and then gradually to a green color. This reaction is quite delicate.

Concentrated nitric and hydrochloric acids dissolve jervia to a colorless solution, which when boiled becomes of a straw color; when heated it melts to a clear oil; at a little above 400° Fahrenheit turns brown; and when the temperature is raised still higher, it burns with a smoky flame.

Thinking that it would be well to compare this alkaloid with the jervia from *Veratrum album*, I subjected some of the latter, which I had previously prepared, to the same tests, with precisely the same results. I do not feel as yet able to state exactly the proportion in

which jervia exists in *Veratrum viride*, but am pursuing a series of investigations on both this and *Veratrum album*, the results of which I trust shortly to be able to make public.

February 14, 1874.

LACTO-PHOSPHATE OF LIME AND COD LIVER OIL.

By C. G. POLK.

The cry of "Eureka," which has ascended so loudly over the new hobby, lacto-phosphate of lime and cod liver oil, it seems has almost led the enthusiastic members of the medical profession to hope that the great specific for all the ills to which flesh is heir had at last been found. The long high-sounding name seems to invest it with solemn import, and leads us to regard it with respect and confidence. It seemed to be the very thing for a proprietary medicine and consequently it did not take very long to secure it a copyright.

The errors of the combination, outside of the quackery into which it has been run, however, immediately concerns us, and to point them out I am prompted to indite this.

In the first place the syrup of lacto-phosphate of lime will not combine without the addition of adjuvants with cod liver oil and form a homogeneous mixture. To secure a perfect admixture, other substances must be introduced, and these usually are acacia, tragacanth, and alkalies. Against such a compound, when freshly made, there is perhaps no pharmaceutical objection. The relative amounts of cod liver oil and lacto-phosphate of lime are, however, not so uniformly required under the varying phases of disease, age, sex, and temperament, as to enable the pharmaceutical chemist to prepare a preparation uniformly adapted to every case or one as well adapted to secure the best remedial effect of the agents as when proportioned by an intelligent physician to meet each individual case. This can be done by using an emulsion of cod liver; the one suggested by Mr. Rice is a good formula, to which the syrup lacto-phosphate of lime may be added in whatever amount desired. Thus we would ever get the article fresh, free from rancidity if good oil is used, and have an article preferable to much of that now dispensed. The more I have examined the syrup of the lacto-phosphate of lime and cod liver oil, the more I have become convinced that the preparation is an unfortunate one. Cod liver oil rapidly becomes rancid and unfit for administra-

tion in the presence of the phosphate, lacto-phosphate, and hypophosphate salts of lime. It seems to me that it would be a much better plan to use the oil and lacto-phosphate alternately, than to mix them together; I always do, and often find the result very gratifying. Lacto-phosphate of lime, it seems to me, is more especially adapted to the period of convalescence from acute diseases than chronic ones. As is well known, during the progress of fevers and inflammations, the waste of the phosphate of lime is great and requires a resupply, which is nicely afforded by the lacto-phosphate. But in such cases the cod liver oil is not by any means indicated. In scrofulous diseases of children, the class in which the syrup of the lacto-phosphate of lime and cod liver oil has been very extensively used, and in which no doubt it has given good results, a better preparation would be obtained by extemporaneous combination. As a rule, fixed medical formulas combining several ingredients are objectionable. Dover Powder is an established fact, and the combination of iron, quinia, and strychnia in Easton's syrup is a splendid preparation, incapable of extemporaneous formation as required in the usual routine of pharmacy. A few more instances perhaps might be cited, but the rule still holds good. Lactic acid, it is well known, plays an important part in rheumatism; what result may then accrue from the continued use of the lacto-phosphate of lime in chronic diseases?

NOTES ON SOME NORTH AMERICAN DRUGS.

BY JOHN M. MAISCH.

Cranesbill appears to be used very extensively in some sections of the country, while in others it is comparatively unknown—at least as a domestic remedy. In July, 1872, I received a plant from the region of the Blue Ridge in the State of Virginia, which proved to be *Geranium maculatum*, Lin. The letter accompanying it stated that it (whether the rhizome alone or the entire plant, was not mentioned) has a great celebrity there as a cure for dysentery, diarrhoea and all kinds of bowel complaints. It seems probable, however, that the herbaceous portion of the plant is not employed for the purposes mentioned, since it has merely a faintly bitter taste and is nearly devoid of astringency.

Antidote to Snake Poison.—In August last the root and radical leaves of a plant were received from Mr. T. D. Reed, of Meridian, Miss., which, the letter stated, “is said to be a specific for snake-

bite, and, in fact, the country people use no other antidote in cases of snake bite." Unfortunately, the letter gives no information whatever in regard to the part employed for the purposes stated, or to the manner in which it is used. The plants sent contain neither stem nor flowers, but from the black color of the dried plants and the character of the leaves, were at once referred to the genus *Gerardia*, and by comparison with herbarium specimens were recognized as *Gerardia* (*Dasystema*, Benth.) *quercifolia*, Pursh. It belongs to the subgenus *Dasystema*, which comprises perennial plants with rather large yellow flowers, with the leaves, particularly the lower ones, more or less pinnatifid or cut toothed, and opposite on the stem, the floral leaves being often alternate; it is very difficult to preserve the green color of the plants, all the species readily turning black on drying. The genus belongs to the order of *Scrophulariaceæ*.

The species in question resembles and is closely allied to *Ger. flava*, Lin., and *integrifolia*, Gray, and is distinguished from both by the plant being smooth and glaucous, the lower leaves being usually twice pinnatifid, and by the peduncles attaining about the length of the calyx, they being shorter in the other two species named.

Most probably the subterraneous portion is the part employed, and it is not unlikely that, like several other so-called snake roots, the black color which it assumes on drying may have first attracted attention to it for the purpose named. It consists of a short and rather thin upright rhizome, sending off from eight to twelve rootlets, which are about six inches or more in length, nearly simple, when dry slightly furrowed longitudinally and readily breaking transversely. The fracture is even, somewhat granular, exhibits a thick cortical portion of a dark gray color, surrounding a thin ligneous centre, of a yellowish color and a rather irregular shape. As far as can be judged from the taste, the root probably contains a principle analogous to saponin.

Verbena bracteosa, Mich.—Branches of this plant were received last August from Mr. Buntin, of Terre Haute, Ind., who states that it is used there by physicians in the form of infusion, with marked success, in the treatment of scrofulous affections, particularly in scrofulous sore eyes, and that its alterative properties are claimed by some to be more potent than those of iodide of potassium. The plant is abundant in the neighborhood of Terre Haute, and the specimen received agrees in every respect with the specimens in the College herbarium coming from Kentucky.

The plant is procumbent and widely spreading, with its stems branching to the length of from 12 to 18 inches. It is covered with spreading whitish hairs, the leaves are narrowed at the base into a short petiole, broadly lanceolate in outline, deeply cut-toothed, or the lower pinnatifid and the teeth rather acute. The small blue or purplish flowers are collected in dense spikes terminating the branches, the numerous bracts being longer than the flowers, lance-linear in shape or the lower deeply three-cleft. Its hoariness and its dense long bracted and squarrous spikes are quite characteristic for this species, which possesses a gradually developed but lasting bitterness.

I have not been informed of the strength or dose in which the infusion is given. The plant appears to merit some attention, particularly with the view of isolating the bitter principle and determining its value as an alterative.

California Opium.—I have received from Mr. J. H. Flint, of Marysville, Cal., a handsome specimen of opium, in regard to which the following information was given :

"The opium was raised in Sutter county on the Sacramento River, about fifteen miles from this city. The expense attending the cultivation of poppy, and the collection of opium, does not warrant the outlay of sufficient capital to produce large quantities, although the soil and climate are admirably adapted to that purpose. I obtained $7\frac{1}{2}$ per cent. of morphia from a specimen *recently collected*. It yielded 52 per cent. of soluble matter to boiling water, and lost 17 per cent. of moisture after drying at 212° F. What I have used seems to answer quite as well as the imported article."

From this statement it appears that the opium was assayed in its crude undried state; if an allowance is made for the 17 per cent. of moisture, Mr. Flint's assay would give $(100-17) : 100 :: 7.75 : 9.84$ per cent. morphia in dry opium, or nearly the strength of opium as directed by the pharmacopœia. The high price of labor in California, it may be supposed, renders the cultivation of the poppy solely for the production of opium, unprofitable; but the seeds contain a large percentage of a bland fixed oil, and after its expression are valuable as feed for cattle; poppy culture may, therefore, notwithstanding the drawback of high wages, not prove unprofitable.

The opium received was more homogeneous in texture than Smyrna opium, of a good strong narcotic odor, and unexceptionable in its physical properties.

Oregon Balsam of Fir.—Under this name an oleo-resin has appeared in our commerce during the last year, which is rather suspicious in appearance. As far as could be ascertained, it comes from New York, and the writer has not been able to trace it beyond that city. It is a thick liquid, perfectly transparent, of a bright brownish color and a distinct terebinthinate and aromatic odor. On rubbing a little of it between the fingers, different odors become quite evident, the last one remaining being that of nutmegs. It has the appearance of being merely a solution of common rosin in oil of turpentine flavored perhaps with a little of the oil of *Eucalyptus globulus* and a somewhat larger quantity of the volatile oil of nutmegs. Is such an article known on our Pacific coast, and if so, what is its source and how is it obtained?

Adulterated Serpentina.—Recently a rhizome with its rootlets was handed to me, with the statement that several bundles of it had been found in a bale of serpentaria obtained from a Western State. The adulteration was promptly recognized as the underground portion of *Cypripedium pubescens*, Lin. (not *C. parviflorum*)*. This differs so considerably from *Aristolochia serpentaria* and *reticulata*, that the former can never be mistaken for the latter, and the adulteration can therefore be practised successfully only when Virginia snake root is sold in bulk. The rhizome of the latter is quite thin, rarely exceeding one-tenth inch in diameter, the remnants of the over-ground stems are invariably projecting as short branches from the rhizome, which terminate by a scarcely concave scar. The rhizome of *Cypripedium* is much coarser, the stems die off to the rhizome, leaving large deeply cup-shaped scars, the older ones penetrating deeply into the rhizome. *Cypripedium*, moreover, is a monocotyledonous plant, while serpentaria is dicotyledonous and the difference in the characteristic disposition of the ligneous bundles is quite evident.

PANCREATIC EMULSIONS OF SOLID FATS.

By RICHARD V. MATTISON.

Read at the Pharmaceutical Meeting, Feb. 17th.

Emulsions may be divided into those of solid and liquid fats. Since the publication of my former papers upon the subject of Pancreatin (see Amer. Journ. Pharm., Dec., 1873, and Feb., 1874), and indeed

*For a description of these rhizomes refer to Amer. Jour. of Pharm. 1872, p.297.

before they were written, I have spent much time in endeavoring to prepare a perfect emulsion of solid fat which would keep without becoming oxidized and at the same time form a preparation which would not offend the most delicate palate. This I think is accomplished in the present preparation, here exhibited.

The great superiority of solid fat over cod-liver oil consists principally in the fact that the former is a body rich in stearin, while cod-liver oil is chiefly olein. In the normal diet a person partakes principally of food rich in the former, hence it is that a similar body must be presented for assimilation. Cod-liver oil usually assimilates more rapidly than other fats, and if it can be continued in any case for some time, rapid improvement generally takes place. To this there is the objection that olein cannot replace stearin in the animal system, and the work is not thorough. Again, fats containing much olein are certainly partially assimilated through venous absorption, and this is a reason why patients so soon tire of the oil. The portal system becomes choked up, cathartics are necessary, and even the good effect produced is frequently lost by the course rendered necessary by these circumstances. This becomes of interest to pharmacists, first, from it being to our interest, in a pecuniary way, to devise something better than cod-liver oil, and, second, as an aid to the physician, pharmacy should select such agents as a clear, sound theory suggests, and, by scientific manipulation, so combine them and mould them that they may be of the most potent remedies in the hand of her sister Medicine.

Thus pharmacy, to prevent the loss of fat which is frequently occasioned by the choking up of the portal system through the administration of too much olein, selects a solid fat which is only absorbed by the lacteals, and thus the amount of fat necessary for perfect nutrition can be administered in the natural manner. The fat formed by the assimilation of this emulsion is of a firmness not readily attainable by the administration of cod-liver oil or other similar elements of nutrition. The administration of cod-liver oil in connection with the emulsion of solid fat, however, probably answers more efficiently than either alone.

The emulsion of solid fat is best prepared in the following manner:

Take of the fresh pancreas of the pig, one hundred pounds; lard, purified, eighty pounds; water, six gallons.

Dissect off all the fat and other extraneous matter from the pan-

creas, and comminute finely. A sausage cutter, driven by steam, is one of the most complete pieces of machinery for this purpose. After coming from the cutter it is allowed to drop with the fat into a cylindrical hopper driven by the same power. Into this hopper the six gallons of water are allowed to trickle slowly until a perfect emulsion is formed. From the hopper the emulsion is transferred to the press, in which a strong twilled flannel bag is placed, which should be of two thicknesses of material, and the emulsion is thus rapidly separated from the membranous areolar tissue of the pancreas.

To this emulsion ether is added, and the mixture allowed to remain at rest, with occasional agitation, for a period of about forty-eight hours. For the above quantity from two hundred and fifty to two hundred and seventy-five pounds of ether are required. At the end of this time the mixture separates into two layers or strata, viz., an ethereal solution of pancreatized fat at the top, and an aqueous solution of the impurities of the lard, &c., at the bottom. This mixture is allowed to stand in a large cedar vat, which has glass plates inserted in the side to allow the operator to observe the point of separation between the ethereal and watery stratum. Into the side of this vat, which should be tall and narrow at the top, like a precipitation jar, a number of wooden spigots are inserted, through which the ethereal solution of pancreatized fat is drawn off into a filtering apparatus, so arranged as to prevent the escape of the ether. (If allowed to stand long enough, a considerable portion will need no filtration.) This filtered ethereal solution is transferred to a suitable still, and the ether distilled off with gentle heat. This is the most troublesome part of the process, as it requires a considerable length of time to free the fat from the last traces of ether, unless the temperature is raised, which results in the decomposition of the emulsified fat.

The pancreatin seems to split up in some manner by heat, leaving the fat in the same condition as it was before, or at least its emulsifying power is very much impaired. At the same time there is a peculiar sulphurous odor developed, reminding one of the presence of onions or garlic, or a trace of allyl sulphide or sulphhydrate.

After the fat has been freed from ether with due regard to the temperature, it is removed from the still, and to every fifty parts of this fat seventy-five parts of distilled water and twenty-five parts of alco-

hol are added, both being added very carefully; when all the water and alcohol has been taken up, enough oil of cloves is added to impart a pleasant flavor.

From my experiments made before the publication of my first article in the "Journal," Dec., 1873, I was led to suppose that, contrary to the views of eminent physiologists, pancreatin has no power of decomposing fat. These views were expressed at that time, and the following facts elucidated by the practical management of the above process will serve as further illustrative of the facts there mentioned.

The first is that the pancreatized fat obtained by evaporation of the ethereal strata before mentioned, when acted upon by plumbic oxide, yields lead, plaster and glycerin. This certainly shows that the fatty acids are still held in combination with the oxide of glyceryl, although the fat be pancreatized and emulsified.

Second, the aqueous solution left after the decantation of the ethereal strata contains no glycerin. This proves the absence of even partial saponification upon the mixing of the fat in the first instance with the pancreas.

A sample of the emulsion of solid fat, prepared as above, was presented our late esteemed Prof. Procter, who regarded it with much favor, and spoke at length upon it in connection with the sample of pancreatic emulsion of cod-liver oil which is here exhibited, both of which samples were exhibited to the class upon the occasion above referred to, which was the evening of his death.

The emulsion prepared by this process should have an acid reaction to litmus paper, and should not separate upon standing. Much care is necessary in the manipulation to prevent this.

When added to a small quantity of water, and stirred until complete mixture is effected, the whole has the appearance of milk, and any quantity of water may be added without disturbing in the least the appearance of the emulsion. This I now show you, and you will notice how perfectly the fat is emulsified.

A superior method of administering the emulsion is to add it, little by little, to milk; to those persons having an antipathy to milk it is easily given in a mixture of arrowroot and water. This proves an excellent method, as the pancreatic emulsion, as well as the pancreatin itself, has a decided action upon amylaceous matter, changing it to

glucose; hence it can be easily seen how important the administration of this in connection with arrowroot is in cases of marasmus and other infantile diseases arising from defective nutrition.

In this I intended to present a formula for pancreatic emulsion of cod-liver oil which *would not separate* upon standing, but remain perfectly emulsified. Want of time has prevented this, my experiments in this not having thus far proved perfectly satisfactory.

Throughout all my experiments I have been greatly assisted by both my partners, to whom I acknowledge my indebtedness, and to much information and pleasure derived through a careful perusal of the most prominent medical periodicals for several years back. I would refer the reader for much useful information to the back numbers of the *Lancet*, *Practitioner*, *Medical Press and Circular*, *British Medical Journal*, *Chemical News*, *Chemist and Druggist*, and many American reprints.

Philadelphia, 2 mo., 1874.

AQUA CINNAMOMI, U. S. P.

BY EDMUND BACKHAUS.

The Pharmacopœia directs for preparing this water to take of

Oil of Cinnamon,	.	.	half a fluid drachm,
Carbonate of Magnesium,	.	.	sixty grains,
Distilled Water,	.	.	two pints.

Rub the oil first with the carbonate of magnesium, and then with the water, gradually added, and filter through paper.

Made according to this process, no doubt many pharmacists, as myself, have derived unsatisfactory results.

At first the filtered water is of a beautiful light canary yellow color, but on standing for a short period it invariably deposits the cinnamic acid contained therein, which makes it a very unsightly preparation.

In order to procure a more satisfactory result I was induced to make several experiments. My first was to rub up the oil with calcined magnesia, thinking, perhaps, that the carbonic acid of the magnesia had some effect on the oil; this, however, was found not to be the case.

My next was to make the water in the usual way, then to pass car-

bonic acid gas through the filtrate for a few minutes; the result being a beautifully clear solution, the canary yellow color having disappeared, but in odor and taste the water remained unchanged.

The product of this last experiment has been standing on the shelf for a long time, unaltered.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

*Ferrated Cod Liver Oil** was prepared by Julius Muller by dissolving one part of sublimed ferric chloride in one hundred parts of cod liver oil, which thereby acquired a deep violet, almost black, color, and rapidly became rancid, while the iron compound was reduced to ferrous salt.

A handsome ferrated oil, however, is obtained by triturating one part of benzoate of iron with light cod liver oil until one hundred parts of the latter have been added, agitating the mixture occasionally during several days, and filtering. The clear filtrate is of a yellowish-brown color, and contains nearly one per cent. of ferric benzoate. This salt must be prepared for the above purpose from benzoic acid obtained from benzoin; the commercial salt usually has a urinous odor, and imparts to cod liver oil a disagreeable odor and taste.—*Archiv d. Phar.*, Dec. 1873, p. 534.

Impurities in Medical Chemicals.—Dr. R. Goddefroy in *Zeitschr. d. Oesterr. Apoth. Ver.* 1874, p. 15, gives a list of chemicals which are usually found in Austrian commerce in an impure condition. Oxide of mercury contains carbonate of calcium; hydrate of aluminum contains basic sulphate of aluminum, and tartar emetic, golden sulphur, precipitated sulphur, phosphate of sodium, sulphate of copper, ammonia water, iodide of potassium, corrosive sublimate, caustic potassa, etc., are often not sufficiently pure.

Remedy for Frostbites.—Berthold recommended about twenty years ago† tannin for this purpose. Rhien recommends the addition of iodine as follows: 30 grams of tannin are dissolved in 200 cc. of water, and 3 grams of iodine in 50 grams of alcohol; the solutions are mixed and the mixture diluted to 1½ litre. The mixture is placed

* See also American Journal of Pharmacy, 1861, p. 317.

† See American Journal of Pharmacy, 1856, p. 180.

upon a slow fire, and the affected part immersed until the liquid becomes too hot; the part is then allowed to dry near the fire. The application is made once daily, a complete cure being effected after four or five days.—*Wittstein's Viertelj. Schrift.*, 1873, 602.

PILLS OF SULPHATE OF QUINIA.

BY WILLIAM DELKER.

Pharmacists are often requested by physicians to make quinia pills as small as they possibly can, and, after trying a number of experiments, I have found that glycerin is the best excipient. It makes a very good mass, and does not increase the bulk of the pills. I have been using it for a number of years, and it has always given general satisfaction. The following is the proportion of glycerin to be used:

R _x .	Quiniæ Sulph.,	.	.	.	grs. xxiv,
	Glycerinæ, .	.	.	.	gtt. viii.
M. ft. pil. no. xii.					

I drop the glycerin from a one-ounce prescription vial.

NOTE BY THE EDITOR.—Glycerin has been suggested as an excipient for quinia pills by Dr. T. E. Jenkins, in "Amer. Journal of Pharmacy," 1869, p. 119; and mixed with honey, by W. P. Creecy, in the same volume, page 7.

ON A NEW ALLOTROPIC MODIFICATION OF PHOSPHORUS.

BY PROF. EDWIN J. HOUSTON.

In connection with Prof. Elihu Thompson, of the Artisans' Night School, the author has undertaken an extensive series of experiments, resulting, it is believed, in the discovery of a new allotropic modification of phosphorus.

It has long been known that when phosphorus is boiled in strong potassium hydrate, and then allowed to cool slowly, it retains its liquid state for some little time, but that if shaken, or touched by a sharp point, instantly solidifies.

We believe that in the cases heretofore observed, the property of retaining the liquid state may be owing to the admixture with the ordinary phosphorus of an allotropic modification, having the proper-

ty of retaining its liquid state indefinitely. Hence, if this modification be obtained sufficiently pure, it would probably exhibit properties strikingly distinct from the common variety. We have therefore instituted a series of experiments, with the following results.

Good phosphorus was taken and boiled repeatedly in strong solution of potassium hydrate, water being occasionally added to replace that lost by evaporation. Care was taken by cautious stirring to prevent the phosphorus from being carried to the surface, by bubbles of the disengaged gas. When the operation had continued for five or ten minutes, the liquid phosphorus was carefully washed by replacing the alkaline solution by a stream of running water. In this way, all the hypo-phosphites were removed as well as the liquid and gaseous hydrides of phosphorus. The purified liquid phosphorus is now in a condition which we believe to be a new and hitherto unnoticed allotropic modification. It has the following properties :

1st. That of retaining for an apparently indefinite time its liquid condition, even when exposed to temperatures very considerably below the melting point of ordinary phosphorus. A carefully prepared specimen has been kept by the authors for upwards of *four months*, and is still, at the date of this publication, in the liquid condition. The specimen in question is preserved beneath a water surface in a small test tube. Its weight is about one-eighth of an ounce. The test tube is tied by a string and suspended in a position where it is free from jars or sudden shaking. The room in which it is preserved has been for weeks without a fire, the temperature having often reached a point probably near 40° F., and yet the liquefaction has not been disturbed. There is every reason to believe that this specimen in common with others experimented upon, will instantly solidify on being touched.

A small specimen placed in a test tube and covered by a water surface, was exposed to artificial cold, produced by the rapid evaporation of ether. It solidified at about 38° F. Under more favorable conditions, and with larger masses, it is probable that the temperature could be reduced still lower.

2d. Another respect in which this liquid differs from the ordinary variety is its non-oxidation on exposure to the air.

3d. It does not shine in the dark. This follows from the preceding property. Several specimens showed no appreciable light when ex-

posed to direct contact with air in a dark room. We regard this very unusual property as suggestive of an allotropic state.

Apparently two modifications of solid phosphorus result from the solidification of the liquid variety. One is tough and waxy, like ordinary phosphorus; the other brittle and crystalline in texture. The best liquid specimens in solidifying, always gave the second variety—indifferent ones, the first. We therefore regard that producing the second, as the true liquid modification.

Rough experiments were made in order to ascertain whether the liquid modification underwent any change of volume by solidification. For this purpose a specimen was placed in a test tube filled with water, and a small capillary tube also filled, passed down into the vessel, and attached to it by a well-fitted cork. Any appreciable change in the volume of the phosphorus would cause a rise of the water in the capillary tube. We expected to find a slight change, but none was observable. This result was probably owing to the expansion occasioned by the heat emitted on solidification, exactly balancing the contraction caused by the passage from the liquid to the solid state. No sudden movement of the capillary column was noticed on the instant of solidification.

In order to see whether the liquid state was due to hydrogen in combination with the phosphorus, we placed small pieces of the solid variety in a tube, whose ends were afterwards drawn out into capillaries, and then, passing hydrogen from a small generator through the tube, melting the phosphorus. A liquid resulted, possessing different properties from that formed by boiling in potassium hydrate. It was quite mobile, of an amber color, and on solidifying, produced the waxy material.

A fact, not perhaps well known, was noticed during the conduct of the experiment. A colorless gas was evolved from the free end of the tube which was spontaneously inflammable in air. The heat of this flame was, however, so slight as to render it incapable of igniting the hydrogen issuing with it.

To test the effect of the boiling point upon the production of the allotropic modification, specimens were prepared by long boiling in saturated solution of chloride of zinc. We were unsuccessful in obtaining the liquid modification. A high boiling point cannot, therefore, be assigned as the entire cause of the change.

The substance in question may be merely a very pure phosphorus,

yet its liquid condition and non-oxidation can scarcely be ascribed to this circumstance. We therefore consider that the existence of a hitherto unknown liquid modification of the element phosphorus is rendered highly probable. The distinct properties it possesses, apart from the ordinary substance, are much more clearly marked than those upon which the elastic modification of sulphur is based.

It may be mentioned incidentally that the brittle crystalline mass, produced on the passage of the liquid modification to the solid state, differs from the waxy variety of ordinary phosphorus. It oxidizes so rapidly on exposure to air as to produce a rise of temperature sufficient for its liquefaction. The liquid thus produced possesses only the properties of ordinary melted phosphorus, and catches fire very readily.

Central High School.—Journ. Franklin Inst., Feb. 1874.

THE MEDICINAL EXHIBITION OF PHOSPHORUS.

By A. C. ABRAHAM.

In the "Pharmaceutical Journal" of December 6th appeared an article by Mr. Gerrard, in which he recommended a method for combining phosphorus with resin for the above purpose.

The process involves the application of a strong heat under circumstances extremely inconvenient and dangerous to the operator, and calculated to deteriorate the product by the oxidation of the phosphorus, and by its conversion into the amorphous form.

To obviate these disadvantages I would propose to use some resin fusible below the boiling-point of water, and also sufficiently heavy to sink in that liquid. Balsam of tolu will be found to answer both these requirements, and by its use the combination can be effected entirely under water. Experiment has shown that four grains of phosphorus are perfectly dissolved by 96 grains of washed tolu, if melted together under water and well stirred.

The preparation so made, when examined microscopically, does not show any particles of undissolved phosphorus, and when seen in the dark, and rubbed between the fingers, it gives off a perfectly *equally distributed* light.

This preparation may, therefore, be formed into pills, with every confidence in the equal distribution and activity of the phosphorus.

Liverpool.

—London Pharm. Jour., Jan. 10, 1874.

COMBINATION OF LIME AND GLYCERIN, AND ITS PHARMACEUTICAL APPLICATIONS.*

By P. CARLES.

The recent publication of a note upon this subject† has induced the author to put on record some experiments, the results of which were communicated orally to the Paris Société d'Emulation pour les Sciences Pharmaceutiques in 1871, but have not hitherto been published.

When distilled water is shaken with lime under normal circumstances it only dissolves 1.251 grams per litre; but this proportion is, however, singularly increased by the intervention of neutral bodies, such as the sugars. That glycerin also acts in the same manner was noticed by the author, and gave rise to the following experiments:

Into a series of flasks of similar capacity were placed constant quantities of 100 grams of distilled water and 20 grams of pure lime, together with varying proportions of glycerin, 0, 50, 100, 200, 400, etc. The flasks were labelled, 1, 2, 3, 4, 5. After agitation of the mixture for some time at a temperature of 18° C. the quantity of lime passed into solution was estimated alkalimetrically, and found to be—

No. 1,	.	.	.	.	.	.	1.251
“ 2,	.	.	.	.	.	.	1.865
“ 3,	.	.	.	.	.	.	2.583
“ 4,	.	.	.	.	.	.	4.040
“ 5,	.	.	.	.	.	.	6.569

Now, if each of these numbers be reduced by 1.251, the co-efficient of the solubility of lime in water, it will be found that an addition of 50 parts of glycerin to 1000 of water augments by nearly one-half the solubility of the lime, and that this solubility is doubled by the addition of 100 parts of glycerin per litre. If the proportion of glycerin be raised beyond 200 parts the quantity of lime dissolved is still sensibly increased, but starting from that figure it is in proportion irregularly inverse to the quantity of glycerin added. It is the author's opinion that the combination of glycerin with lime, which

* Bulletin de la Société de Pharmacie de Bordeaux, vol. xiii, p. 294.

† Pharm. Journ. [3], vol. iv, p. 321. See, also, Amer. Journ. Pharmacy, 1873, p. 397 and 557.

is a true combination very soluble in water, is on the contrary slightly soluble in glycerin itself. Commencing at experiment 5, it communicated to the liquor a latescence more and more opaque, and whilst the undissolved lime was precipitated rapidly or remained upon the filter, the glycono-calcic compound remained for a long time in suspension, or even passed through the paper. In short, the glyconate of lime is formed in larger proportion as the quantity of glycerin is increased, but being less soluble in the latter than in water remains in suspension.

These solutions appear to the author to be susceptible of the following applications:

(1) In a chemical point of view, since they remain unaltered during a long time, they might advantageously replace as alkaline liquors the changeable solutions of saccharated lime.

(2) Pharmaceutically it would allow of the simplification of the preparation of the lime liniment, and yield a superior product. The Codex orders one part of oil of almonds, and nine parts of lime water, to be agitated together, and the separation of the soap which floats on the top. If, in the place of ordinary lime water, equal parts of almond oil and of lime water containing 10 per cent. of glycerin are simply agitated together, a consistent calcareous soap is produced, which, even after several weeks, loses none of its consistence or homogeneity.

(3) Considered therapeutically, the addition of the glycerin, which besides is produced in small quantity in the ordinary process, appears to constitute an excellent adjuvant.—*Pharm. Journ. (Lond.)*, Jan. 10, 1874.

ON CYMENE AS A CONSTITUENT OF, AND DERIVATIVE FROM,
OIL OF TURPENTINE.

By C. R. A. WRIGHT, D.Sc.

On Feb. 6, 1873, the writer read before the London Chemical Society a paper (*Chemical News*, vol. xxvii., p. 82; *Journ. Chem. Soc.*, [2], xi, 549) wherein it was shown that there are reasons for supposing that the small quantities of terephthalic acid obtained by the oxidation of certain terpenes are really derived, not from the terpene itself, but from cymene simultaneously present; and it was moreover stated that cymene had been actually isolated from two such terpenes (viz. myristicene from nutmeg oil and terebenthene from oil of turpentine) by a process suggested to the writer by Dr. Hugo Müller, viz.,

"treating the mixture with sulphuric acid so as to polymerise the terpene present, and then diluting with water, and distilling in a current of steam."

Shortly after (April 3, 1873), the writer read a second paper describing the properties of the cymene thus obtained, and contrasting them with those of cymene from other sources (*Chemical News*, vol. xxvii., p. 180; *Journ. Chem. Soc.* [2], xi., 686).

On Feb. 21, 1873, M. Ribau communicated to the Paris Chemical Society the results of his experiments on the action of sulphuric acid on terebenthene (*Bul. Soc. Chem. Paris*, xix., 242), and on July 4, 1873, he also read another paper on the same subject (*Ibid.*, xx., 97 and 100), the result arrived at being that cymene is formed from the terpene by the reaction $C_{10}H_{16} + H_2SO_4 = 2H_2O + SO_2 + C_{10}H_{14}$. In a postscript to the second of the above mentioned papers, written before the appearance of M. Ribau's second communication, the writer suggested that the cymene obtained by M. Ribau was not formed thus, but was that pre-contained as such, the main reason given being that by cautiously acting on oil of turpentine with sulphuric acid, "the writer had succeeded in isolating cymene from oil of turpentine, without the evolution of more than inconsiderable quantities of sulphurous acid." The method employed was as follows:—Oil of turpentine freed from oxidized substances by distillation over sodium was very gradually mixed with about its own weight of sulphuric acid, the mixture being carefully cooled; after a few minutes the whole was poured into a large bulk of water, the oily layer decanted and distilled with water, and the oily layer of distillate treated repeatedly in the same way. Only once or twice was a very faint odor of sulphurous acid observed; and, as about 3 per cent. of nearly pure cymene was ultimately obtained (irrespective of losses and waste in distillation), it was inferred that this was pre-contained as such.

It being in no way improbable that some specimens of oil of turpentine might contain more cymene than others, the pre-existence of M. Ribau's cymene thus appeared exceedingly probable, even though the amount obtained by this chemist was considerably above 3 per cent.

Between August 20 and September 1, 1873, Herr Orlewski read before the Meeting of Russian Naturalists, at Kasan, a paper, in which he states (as reported by Richter, *Ber. Deut. Chem. Ges.*, vi., 1257), that considerable quantities of cymene are produced by the action of sulphuric acid on turpentine oil in the ordinary process for

preparing terebene; and that terebene itself is altered by this reagent, cymene being formed, sulphurous acid being simultaneously generated. At the same time Herr Orlewski stated, that by long continued fractional distillation of an old yellowish sample of turpentine oil, he succeeded in isolating a small per centage of cymene (10 grammes from $1\frac{1}{2}$ litres), and ascribed the presence of this substance to the action of atmospheric oxygen on the original oil, whereby hydrogen is removed from the terpene.

As regards this explanation, the writer has shown (*loc. cit.*) that by the action of oxidizing agents, certain terpenes undergo the reaction, $2C_{10}H_{16} + O_2 = 2C_{10}H_{14}O$, the resulting bodies presenting great similarity to certain isomerides of camphor which readily break up by treatment with dehydrating agents into cymene and water, $C_{10}H_{16}O = H_2O + C_{10}H_{14}$. M. Ribau has very recently published in the *Bulletin* of the Paris Chemical Society (January 5, 1874, pp. 3, 4) two notes, the one a reclamation for priority over Herr Orlewski, the other a discussion of the reasons assigned by the writer for supposing that the cymene obtained by M. Ribau was pre-contained as such.

As regards the first question, a comparison of the above dates will show that, whilst M. Ribau undoubtedly preceded Herr Orlewski in this matter by several months, the results of the writer were made public in London more than a fortnight before those of M. Ribau were first brought before the notice of Parisian chemists; it is therefore evident that, whilst the experiments of M. Ribau and the writer must have been carried on almost simultaneously, the actual claim to priority rests with England rather than with France or Russia.

As regards the second point, the writer has great pleasure in confirming the exactitude of M. Ribau's results; whilst he has no doubt from his own results (and those of Herr Orlewski) that cymene is actually pre-contained in, at any rate, some specimens of oil of turpentine; and in other terpenes he has yet found that when the action of the sulphuric acid is prolonged for some hours at the ordinary temperature (and especially if the mixtures be made quickly so as to heat rapidly), sulphurous acid is copiously given off, and *a much larger quantity of cymene is obtainable than can be if all possible care and precautions are taken to avoid the formation of sulphurous acid*; this additional quantity must necessarily be found, as M. Ribau first suggested, by the reaction $C_{10}H_{16} + H_2SO_4 = 2H_2O + SO_2 + C_{10}H_{14}$.

Chemical Laboratory, St. Mary's Hospital, Jan. 11, 1874.

Chemical News, London, January 23, 1874.

STAS-OTTO'S SCHEME FOR THE DETECTION OF ALKALOIDS, Etc.

*Translated from the German by H. CARRINGTON BOLTON, PH. D.

Taken up by ether in acid solutions.†			Taken up by ether in alkaline solutions.‡			
With tannic acid.			Solid (odorless).			
Precipitated.		No action.	With concentrated sulphuric acid.			
COLCHICIA.	DIGITALIN.	PIROTOXIN.	In the cold.		On heating.	
The yellow solution is colored violet by concentrated HNO_3 .	Mixed with a solution of gallics concentrated H_2SO_4 a bright red stratum is formed and finally a red liquid.	The dilute alkaline (NaHO) solution is colorless and reduces Fehling's copper solution.	Rose-red.	Brown-red.	Yellow, then orange, and cherry-red.	Yellow, then violet-blue, and dark red.
			BRUCIA.	DELPHINIA.	VERATRIA.	NARCOTINA.
			Soluble in concentrated HNO_3 , with a bright red color, which becomes yellow on heating. On adding stannic chloride to this solution, a violet color is formed.	forms with concentrated H_2SO_4 and bromine water a reddish-violet color. The same coloration appears on evaporation with phosphoric acid.	forms with concentrated HCl colorless solution, which becomes a fine dark red on heating.	on dissolving in H_2SO_4 with a little HNO_3 , forms a red color. Concentrated H_2SO_4 with a trace of sodium molybdate forms a green color. Dissolves in HCl , forming a pale green solution which turns yellowish-red on adding NH_4HO .
On diluting the nitric acid solution and making it alkaline with NaHO , an orange-red coloration is obtained.	On dissolving in concentrated H_2SO_4 and mixing with a drop of bromine water, a violet-red coloration is produced.			ACONITIA dissolves in H_2SO_4 with a red-brown color.		

Taken up by ether in alkaline solutions.‡					Insoluble in ether
Solid (odorless).			Liquid (strongly odorous).		MORPHIA.
With concentrated H_2SO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$.		With concentrated phosphoric acid and application of heat.	With chlorine water.		The ammoniacal solution gives a grass-green solution on heating with euprammonium (Nadler). Concentrated HNO_3 colors it blood-red, neutral FeCl_3 colors it dark blue. On dissolving in concentrated H_2SO_4 , heating, allowing to cool, and then adding a little HNO_3 , an intense red color is produced. Reduces an acid solution of iodic acid, the iodine dissolving out in Cs^2 with a violet color.
In the cold.	On heating.		Precipitated.	No action.	
Violet-blue.	Characteristic odor.				
STRYCHNIA forms a yellow solution with HNO_3 . The violet coloration also obtains when either potassic ferri-cyanide, plumbic and manganic dioxides, or potassic iodate is used in place of $\text{K}_2\text{Cr}_2\text{O}_7$.	ATROPIA. The odor is better formed by placing the alkaloid on a few crystals of chromic acid and gently heating until the green oxide of chromium begins to form.	ACONITIA produces a violet color. Dissolves in concentrated H_2SO_4 with a hair-brown color.	CENIA. Aqueous solutions become colored on heating.	NICOTINA. Aqueous solutions do not become colored on heating.	
		DELPHINIA and DIGITALIN behave in the same manner with H_2PO_4 .	Dry HCl gas colors it red and then deep blue.	On gently heating with HCl , becomes violet, and on adding HNO_3 the color changes to orange.	

NOTE. CURARINA gives similar reactions to strychnia, but forms a red color with H_2SO_4 alone, and is moreover insoluble in ether in the presence of acids and alkalis.

*Pharmaceutische Post, Vol. VI., No. 11, June, 1873. †Also a small quantity of atropia.
‡Also partially colchicia and digitalin.—*American Chemist*, November, 1873.

THE CULTURE OF GUNJAH IN BENGAL.

Ganja or Gunjah (*Cannabis indica*), forms an important excisable article in Bengal, and yields a yearly revenue of Rs. 1,106,818 (£110,681). Why the cultivation of ganja is confined to a single tract of land lying on the north of Rajshahye, south of Dinagepore, and southwest of Bogra, is a vexed question. Judging of matters from a practical point of view, similar soils would produce ganja anywhere. Every year the cultivation is extending to the north and east, which is an indication that it is not confined to a limited space. The mode of cultivation, the labor and outlay necessary, the restrictions placed on storage and sale of ganja, the rapidity with which it deteriorates, operate as a check to a successful extension of the cultivation in every district. Ganja is also grown in the tributary mehals of Orissa, but it is of an inferior description, and finds no favor with the smokers in Bengal. All soils are not equally adapted to the cultivation of ganja. Light sandy soils are best adapted, and the plants reach the height of six to seven feet. Poor warm soils sometimes yield good hemp; stiff clays are generally avoided. Extreme moisture is prejudicial to the growth of the plants; the cultivation begins in August, the seeds are sown broadcast in the nursery, and in a week they germinate. In a fortnight, when the plants attain a little strength, and are able to bear transplantation, the nursery is broken, and the seedlings are sent to the field and sown in rows six inches apart from each other. The fields are not large in size, each being on an average fifteen cottahs, or a beegah. The soil is renovated every year by the addition of fresh earth, and before the seedlings are transplanted, the ground is harrowed and manured with oil-cakes and cow-dung, and the soil thus prepared is fit to receive the plants. When the plants spread their leaves, men known as "ganja doctors" are employed to pick out the female plants, which yield no flowers, and are injurious to the crop. Ganja doctors alone can distinguish the female organs in the plants; the process of picking is repeated two or three times, and when the cultivator is sure that all female(?) plants have been uprooted and thrown away, he again manures the ground with cow-dung and liquid oil-cakes, and clears the stems of the plants. In a field of one thousand plants some four hundred are thrown away. In December, when the plants reach the height of four or five feet, ridges are opened, and the ground is irrigated and

manured with oil-cakes. The more oil-cakes are used the more the plants thrive. At the end of January the plants mature, and the harvest season commences. The plants are cut by the cultivators and divided into four or five parts, and exposed to the rays of the sun for three or four days; the leaves being withered, are spread on mats and trampled upon, and they assume the flat shape in which ganja is sold in the market. Round ganja is prepared by a similar process; the stalks being taken off, each branch is rolled up and dried. Chur ganja consists of flowers and leaves. There is no difference in the narcotic powers of these three descriptions of ganja. The natives of the Turkish empire and the North of Africa are far more addicted to the use of haschisch, or hemp, than to that of opium. They have a similar effect, yet the former is decidedly preferred. They use either the dried leaves in smoking, or they drink the expressed juice, or use it in the form of cakes soaked with that essence. Much uncertainty prevails among botanists regarding the plant or plants which produce these narcotics—whether they are different species or mere varieties of the common hemp.* Probably *C. sativa* and *C. indica* are identical, yielding the ganja and bhang of the East. Both the above drugs are sold separate in the Indian bazaars, and in external appearance are considerably different. Ganja has a strong aromatic and heavy odor, abounds in resin, and is sold in the form of flowering stalks for smoking with tobacco. It is made up in bundles about two feet long and three inches in diameter, containing about twenty-four plants. Bhang is in the form of dried leaves without stalk, of a dull green color, not much odor, and only slightly resinous. Bhang is not smoked, but pounded up with water into a pulp, so as to make a drink highly conducive to health, and people accustomed to it seldom get sick. Bhang grows in abundance in Tirhoot and Bhagulpoor in the wild state. In Seinde a stimulating infusion made from the plant is much drunk among the upper classes, who imagine it is an improver of the appetite. Ganja is frequently mixed with tobacco to make it more intoxicating. This is especially done by the Hottentots, who chop the hemp leaves very fine, and smoke them together in this manner. Sometimes the leaves powdered are mixed with aromatics, and thus taken as a beverage, producing much the same effects as opium, only more agreeable. The cost of cultivating a beegah of land varies from

* "Canadian Pharmaceutical Journal."

30 to 35 rupees. The quantity of manure required for a beegah of land and cost incurred for it, as well as other expenses incidental to the cultivation, are given below.

	Quantity required for manuring one beegah of land.—Maunds.	Cost incurred.		
		Rs.	s.	p.
Cow-dung,	10	1	14	0
Oil-cake,	10	12	2	0
Rent, . . . . .	...	2	0	0
Irrigation, . . . . .	...	6	0	0
Labor, cutting and thrashing, . . . . .	...	12	0	0
Fresh earth added, . . . . .	...	2	0	0
Total,		36	0	0

In fact, without irrigation and manure ganja does not thrive. There are no irrigation wells in this district, and the water required is bailed from the nearest tank, bil, khal, and river. The cultivators fully understand the advantages of allowing land to remain fallow for a year or two, in order that it may produce a good crop of ganja. Ganja is sometimes alternated with barley, mustard, or other pulses. Ganja, like mulberry, is grown on high lands; extreme moisture injures the plants. Each cultivator cultivates one cottah to four beegahs of land; the produce varies from 5 maunds 20 seers to 9 maunds 20 seers per beegah. About 1,100 to 1,200 beegahs of land are annually sown with ganja, and the produce amounts from 9,000 to 10,000 maunds; 1,300 to 1,400 men are engaged in the cultivation. They cultivate on their own account; some of them occasionally take advances from money-lenders, or their landlord, and mortgage the produce under a system of hypothecation, and sometimes they sell off the crops to wholesale dealers and content themselves with a small profit. Some of them let out the lands in bhagjote to under-ryots, and divide the crop in equal shares with them. When fields are sold to wholesale dealers, they cut, dry, and manipulate the plants at their expense for exportation to their own districts. The cultivation of ganja under a system of advances, as is done in indigo, has not succeeded. Twenty years ago, Mr. Brown commenced the cultivation of ganja by making advances to the cultivators; about 8,000 maunds of the drug were cultivated in the first year, which were made up like opium cakes and shipped to the China market. The advances were not renewed—probably Mr. Brown found that the trade was not sufficiently remu-

nerative. Ganja is one of the first staple articles of produce in this district, and the value of export may be estimated at 200,000 rupees. Thirty years ago the value of this export was represented by 40,000 rupees; the drug was sold by the cultivators at eight annas to one rupee four annas a maund, and now the price has enormously increased. The general rise in the price of all articles of food also influenced the ganja trade. From 4,800 to 5,091 licenses are annually issued for the sale of this drug in Bengal. The cultivators of ganja are mostly Mahomedans, because the bulk of the population in the northern part of this district is of that persuasion. Some of them are well-to-do in the world, and have accumulated small fortunes by industry and economy, but they do not know how to utilize their money or enjoy it. The hooka is in general use, and both sexes smoke. Children at an early age acquire the awkward habit of smoking the hooka; at an early hour of morning the men leave the house with a hooka in hand to work in the field. The use of stimulants is unknown to the ryots on the north of this district. Of late they have imbibed the habit of chewing opium; ganja, which is extensively cultivated by them, finds no favor. The ganja trade is carried on by three distinct classes of men: the cultivators who produce the drug, the wholesale dealer who exports it from the producing district, and stores it in a public gola to sell to the retail vendors, and the retail vendors who supply the consumers. Each in his turn makes whatever profit he can. Neither the first nor the second has any fee to pay to Government. The cultivators sell the drug to the wholesale goladar and retail vendor, and to nobody else, and any violation of this condition subjects him to a penalty and a forfeiture of his license. He makes his bargain without the intervention of excise officers. He submits his samples to the purchaser through a broker, and if it is approved, the bargain is struck, and the drug is conveyed to the catchery of the supervisor of the cultivation of ganja to have it passed. The wholesale goladar sells the drug to the retail vendor in the presence of excise officers. The retail vendor pays a monthly fee of four rupees for each license and the duty fixed by the Board of Revenue. This fee in the town of Calcutta and its suburbs is fixed at sixteen rupees in Calcutta, and at eight rupees and four rupees in the suburbs respectively. The wholesale trade is confined to two hundred people, and they are all men of substance. The retail vendors are men of small capital, averse to agricultural labor. They are generally illiterate, and cannot even write

the accounts of their shops. They manage to make a capital living. The whole of the excise duty on ganja is contributed by the laboring classes. There has not been any improvement in the cultivation of ganja; the same manures which had been used in years gone by are used to this day. The same process for conserving the manure is followed. There has evidently been deterioration in quality of the produce; the plants do not weigh so heavy as they used to do twenty years ago.—*Journ. of Applied Science, Feb. 1, 1874.*

GIGARTINA ACICULARIS AS AN ADULTERANT OF CARRAGEEN MOSS.*

By J. DALMON.

The author has for some time frequently observed in French commerce the mixture of *Gigartina acicularis* with carrageen moss (*Fucus crispus*, L.; *Chondrus polymorphus*, Lam.), and he states that he has received specimens of moss containing as much as 40 per cent. of it. The mixture is readily discovered upon a moderately careful examination.

The *Gigartina acicularis*, Lam belongs, like the *Fucus crispus*, to the order of Algæ, sub-order of Choristosporeæ. It is distinguished from the latter by its cylindrical, cartilaginous, subdichotomous, flexuous fronds, with acuminate most frequently bifurcated branches, sending out lateral horizontal spiniform branchlets. The conceptacles are spherical, sessile, and thin. The mixture is also manifested by the light brown tint retained by the pedicels, which gives to the mass an appearance of a less uniform color than that presented ordinarily by carrageen.

Placed in contact with cold water, the *Gigartina acicularis*, absorbs it rapidly and in great quantity, and swells considerably. Treated with boiling water it dissolves, but in much less proportion than *Fucus crispus*; the jelly which it yields upon cooling is opaque, whitish, and without consistence. 100 parts of this alga leaves upon calcination 16 parts of a residue which retains the form of the plant. This ash dissolves partly in water. The solution is neutral; it is precipitated slightly by nitrate of silver, and abundantly by nitrate of baryta and oxalate of ammonia. The solution evaporated, and redissolved in alcohol and water gives, with phosphate of ammonia a crystalline precipitate. The insoluble part of the residue consists of carbonate

* *Répertoire de Pharmacie*, new series, vol. i, p. 696.

of lime and silica. Operating as above the following results were obtained :—

Chlorides of Sodium and Magnesium	0.60
Sulphate of Magnesia	1.20
Sulphate of Lime	6.60
Carbonate of Lime	5.40
Silica	2.20
	<hr/>
	16.00

Calcination with potash and testing with an acid and starch showed no trace of the presence of iodine.

Practically the mixture of *Gigartina acicularis* with carrageen moss presents no advantage to the pharmacist, who would not obtain with this product a jelly presenting the consistence sought for in the preparation of jellies from carrageen. But the author considers that the remarkable quantity of lime salts which the *Gigartina* contains would render it a fairly active medicament in many cases, and especially in phlegmasies of the intestinal canal.—*Pharm. Journ. and Trans.*, Jan. 31st, 1874.

ON THE EFFECT OF GLYCERIN IN MODIFYING THE ACTION OF ASTRINGENTS.

By E. B. SHUTTLEWORTH.

There have been few additions to the materia medica, which, in so short a time, have attained a more universal popularity, have been applied to as manifold uses, or been more generally extolled than glycerin. Its powers as a solvent, equalling, if not exceeding, those of alcohol, have opened up a wide field of usefulness which has generally been entered upon with great advantage. It may be, however, quite possible, and even probable, that a property of such ready adaptability, and of so wide a range, has been to generally made use of; sometimes under circumstances in which its effects may have proved the reverse of beneficial. Of such a character is the indiscriminate employment of glycerin in the preparation of tinctures or fluid extracts of vegetable substances of complex composition; when, though a presentable and permanent compound may be obtained, inert, or, perhaps, injurious agents, which would have been much better undisturbed, are dissolved and retained in solution.

It is not, however, to this modifying action that I would, at present,

call attention, but to an effect depending on another cause. Physicians who have been in the habit of using astringents—as tannic acid, and some of the preparations of iron—have noticed that when these substances are mixed with glycerin, a different, and much milder effect is realized than when an aqueous solution is employed. During the last few months, some of the pharmaceutical journals have alluded to this effect;* and, at the last meeting of the British Pharmaceutical Conference, it was made the subject of a short discussion.† It was then stated by the president, that he was aware of an instance in which three hundred grains of perchloride of iron, dissolved in glycerin, was swallowed, by mistake, without any ill effects. It is certain that a much smaller quantity, in aqueous solution, would have produced serious results. The common experience of physicians with regard to the comparative inefficiency of *glycerinum acidi tannici* was also alluded to. Again, at a meeting of the Pharmaceutical Society held Dec. 3rd,‡ it was stated as a well-known fact, that, if a greatly astringent effect is desired, the solution of tannin in glycerin must be diluted with water; and that the same is true in regard to the styptic action of a solution of perchloride of iron in glycerin. It was also stated that *glycerinum acidi carbolici* was much milder in action than an aqueous solution of similar strength. At the last meeting of the American Pharmaceutical Association the effect of glycerin on astringents was alluded to as having been noticed; as all these statements coincide with the opinions of observant physicians, this modifying action of glycerin may be recognized as an acknowledged fact.

It becomes interesting for us to ascertain the cause of this modifying action; and, in this endeavor, we may consider, first, the nature of the physiological and therapeutical effects produced by astringents; and, secondly, the effect of glycerin on the chemical properties of this class of remedies.

In regard to the first point we find the action of astringents is, in great part, if not entirely, to be attributed to their chemical agency. In most instances, these bodies have an affinity for certain constituents of the animal solids and fluids, and effect changes by direct combination. Pharmacologists are generally agreed on this matter, and it is

* Glycerin; by A. H. Mason, F. C. S., *Chemist & Druggist*, April, 1873, p. 119; and *Can. Pharm. Journ.*, No. lxii, p. 396.

† *Pharm. Jour. & Trans.*, Oct. 1873; and *Can. Pharm. Jour.*, Vol. vii, p. 172.

‡ *Pharm. Journ. & Trans.*, Dec. 1873, p. 451.

thought that, whether applied externally or taken internally, these remedies have a more or less local action, producing astriction or corrugation of the tissues, or coagulation of the fluids. In regard to tannic acid,* Pereira says "Tannin acts on the animal tissues by virtue of its affinity for their constituents. It forms, with albumen and gelatine, compounds which are insoluble in water, and it also combines with fibrin; when taken into the stomach it unites with the constituents of the epithelium, and of the mucous membrane of the alimentary canal." It may therefore be assumed that astringents are in general merely chemical agents, and, if their anticipated effect is to be realized, their chemical composition must not be modified or disturbed.

In order to determine the chemical action of glycerin on astringents I have commenced a series of experiments, which has, so far, only been completed so as to afford indications of a definite and satisfactory conclusion. The substance chosen as best representing the class of vegetable astringents is gallo-tannic acid—the tannin of commerce; the mineral astringents may be aptly represented by the perchloride and persulphate of iron.

The effect of reagents on an aqueous solution of the *glycerinum acidi tannici* is precisely similar to that produced on a simple aqueous solution of tannin. The salts of iron, tartrate of potash and antimony, chloride of sodium, sulphuric and hydrochloric acids, and gelatin, give, in both cases, colorations and precipitates, alike in appearance. In order to ascertain the comparative power of the two solutions in precipitating gelatin, solutions equal in tannin strength were prepared, and it was found that an equal number of measures of the same solution of gelatin were required for precipitation.

Being unable to detect any difference in the behaviour of these aqueous solutions, a solution of tannin in glycerin, undiluted, was treated with solution of gelatin, and it was found that the tannin was *not precipitated*; or, at least, that only a small portion of the glycerin solution which was in immediate contact with the water contained in the solution of gelatin was so affected. This superficial layer of coagulum was, on the application of a gentle heat, immediately dissolved. This result is, so far, satisfactory, and affords a possible explanation of the fact before alluded to—that, in order to realize the full astrin-

* Elements of Materia Medica and Therapeutics, Vol. i., p. 98.

gent effect of the glycerin preparation of tannin, dilution with water is necessary.

I have not had time to pursue this subject further, or to examine into the effect, noted by some observers, that glycerin prevents the precipitation of some of the salts of iron by alkalies.

Speculating on this subject, and bringing to our aid those facts relating to the properties and affinities of glycerin which are already known we find that this substance is by no means chemically inert, not indeed sufficiently so as to admit of a general application as a solvent. The range of glycerin compounds is not at all a limited one, but quite extensive, comprising salts many of which are well defined, and which possess strong individual characteristics and properties. Of those are the simple compounds of glycerin and the inorganic and organic acids, or the more characteristic glycerides or glyceryl ethers. I would hazard the suggestion that when glycerin and tannic acid are left in contact for a considerable time, or when heat is applied in the pharmacopœial process, that glycerotannic acid, or ether is formed. The distinguishing termination *in* applied to ethers of this kind would not, in this case, be appropriate.

I hope to resume this subject when sufficient leisure for further experiment presents itself.

Toronto, Jan. 10, 1874.—*Can. Pharm. Journ. Feb. 1874.*

ACTION OF OIL OF TURPENTINE UPON LEAD AND TIN.

By J. M. MERRICK. B. Sc.

I was recently consulted by a manufacturer of paints as to what metal he could use for lining a large tank in which he intended to keep a stock of oil of turpentine. I advised the use of sheet lead, but he met that advice by producing a well corroded sheet of lead with which a turpentine tank had been lined, and a sample of a white powder which he asked me to examine. I found the powder to be an oxycarbonate of lead, and the paint maker said that after the tank had been used about forty days for storing turpentine, observing the lead to be corroded, he had the oil drawn off, and found a wheelbarrow load of this oxycarbonate of lead upon the bottom of the tank. The sample of oil of turpentine he exhibited was not perceptibly acid, but appeared to be in a normal condition.

Laurent (quoted in Gmelin's Handbook, xiv. 245) found white,

granular crystals of formiate of zinc on the covers of zinc boxes in which oil of turpentine had been kept, and Saussure (Gm. xiv. 247-8) found that in nine months one volume of oil of turpentine can take up one hundred and twenty-eight volumes of oxygen.

It is easy to see that the action of the turpentine in the case brought to my notice was simply that of a vehicle which conveyed the oxygen of the air to the readily oxidizable metal.

This matter lead to some experiments upon the action of acetic acid and turpentine upon tin, viz.: three pieces of pure sheet tin were tweighed and immersed respectively in glacial acetic acid, an acid of 50 per cent. glacial acid, and 50 per cent. water, and in oil of turpentine, reweighed at the end of certain periods, and the loss noted.

With Glacial Acid.				With 50 per cent. Glacial Acid.			
Wt.	Loss.	Loss p. ct.	Hrs.	Wt.	Loss.	Loss p. ct.	Hrs.
28.948				30.209			
28.780	.168	.58	24	30.204	.005	.00017	24
28.1435	.6365	2.21	70	30.191	.013	.0003	70
27.655	.4885	1.74	96	30.183	.008	.0002	96
27.545	.110	.39	100	30.180	.003	.0001	100
27.537	.008	.0003	104	30.173	.007	.0002	104
27.100	.437	1.54	118	30.163	.010	.0003	118

In turpentine, 40.024 grammes of sheet tin lost only .001 grm. in 118 hours.

Laboratory, 49 Broad Street, Boston, Jan. 2, 1874.

—*American Chemist*, February, 1874.

OZONE—A NEW AND CORRECT METHOD OF SUPPLY.

The use of ozone as a disinfectant in hospital wards and public buildings has amply demonstrated its virtue as a purifier of air exhausted by breathing or poisoned with emanations from corrupt or decaying organic matter. The only bar to its more extended use has been the lack of a simple and trustworthy means of generating it, safely and continuously, by a process not involving scientific skill or costly materials.

The latest means suggested certainly bears the palm for simplicity, cheapness, and accessibility to all. It consists simply in the exposure to atmospheric action of common phosphorus matches moistened by water, the alleged result being the production of nitrite of ammonia and ozone—both active purifiers of air.

Knowing the efficiency of moistened phosphorus as a generator of

ozone, the author of the match method, Mr. Sigismund Beer, of this city, set out one day to procure a quantity of that substance to use in sweetening the atmosphere of a room whose musty smell had successfully resisted the power of ordinary disinfectants. Failing to find any phosphorus at the drug stores in his neighborhood, it occurred to Mr. Beer that possibly lucifer matches might furnish the needed element in a condition suited to his purpose. He tried them, dipping them into warm water for a few moments, then suspending them in the obnoxious room. Their effect was prompt and salutary; and thereafter, by continuing their use, he was able to enjoy "the luxury of pure and refreshing air," notwithstanding the room was in the basement of an old cellarless house on made land, the air of which was further tainted by a quantity of moldy books and papers. In a paper lately read before the Polytechnic branch of the American Institute, Mr. Beer narrates a number of subsequent experiments with the same simple materials, the success of which convinced him that he had made a veritable discovery of great importance.

Touching the safety of the method he proposes, Mr. Beer is confident that no overcharging of the air with ozone or other injurious matter may be apprehended from the use of matches in the manner he describes. Both the ozone and the nitrite of ammonia are generated slowly, and their force is swiftly spent by combination with the impurities they are intended to remove. It is obvious that the supply of the purifying agents can be easily regulated by increasing or diminishing the number of active matches. In the room above mentioned, six bundles of matches were kept active—some near the ceiling, others near the floor—by daily watering.

In another instance a single bunch is mentioned as having sufficed for quickly purifying the air of a room in which several adults and children were lying sick, but in this case the air was fanned against the matches while they were carried about the room, thus heightening their activity. How long a match retains its ozonizing power, Mr. Beer does not say. In conclusion, Mr. Beer claims that, whatever may be said of his theory of match action, the fact is indisputable that, in the use of matches as he suggests, we have a handy, wholesome, and inexpensive means of freeing our houses from noxious exhalations and the long train of evils attendant on the prevalence of bad air. The matter is easily tested and certainly well worth trying. —*Scientific American*, February 21, 1874.

Minutes of the Philadelphia College of Pharmacy.

PHILADELPHIA, 2d mo. 17th, 1874.

A special meeting of the Philadelphia College of Pharmacy was held this afternoon at the College Hall; 28 members present. Dillwyn Parrish, President, in the chair.

The President read a minute from William C. Bakes, Secretary of the Board of Trustees, announcing the appointment of a Committee of the Board to draw up a testimonial of respect expressive of our feelings in the loss of our colleague, William Procter, Jr., and to report the result of their labors to a special meeting of the College at an early day.

The Committee being present, signified their readiness to report, and Daniel S. Jones, Chairman, read the following testimonial of respect for his memory, and resolutions expressive of the great loss we have sustained in his sudden decease.

To the Philadelphia College of Pharmacy:

FELLOW MEMBERS.—We meet together to-day on an occasion in the history of this College when it is fitting that we should give expression to our sense of the bereavement which has visited us. In the providence of Him with whom are the issues of life and death, our associate and tried friend—our noble standard bearer—he in whom “was the excellency of our might”—has suddenly been removed from our midst.

On Tuesday morning, the 10th inst., the intelligence was spread among us that Professor Procter had died during the night. So overwhelming was the sense of the loss we had sustained, that our hearts were mute with grief.

Slowly, but not with less impressiveness, comes to us the realization that the voice, so lately heard in instruction and in counsel within these walls, is now sealed in death. While mourning a loss which seems to us almost irreparable, it is fitting that we should call to remembrance the many benefits which the life of our brother has bestowed upon us. For a quarter of a century his name has been inscribed on our banner, and we have found it a talisman of strength.

His life was characterized by earnestness of purpose, single-minded in pursuit of science, sincere in all his relations in life, loving Truth for Truth's sake; his enemies are unknown, but friendship is claimed wherever his name is spoken.

The record of his life is engraved on the character of this institution; our Journal is an enduring monument of the activity and ability of his genius. His name comes back to us from beyond the Atlantic in pharmaceutical literature with acknowledged authority. Well may the drapery of mourning be hung upon these walls, and our eyes turn in depressing sadness to the vacant chair.

It was not alone in his character as a teacher and author that Prof. Procter was known in this community. Modest and diffident even to the extent of rendering injustice to himself, he was amiable, courteous, approachable and ever ready to assist from his store of information and experience those who sought advice from him. Pretension was no part of his composition; facts were to him the only realities.

There can be no tribute paid more fitting to the character of our brother than the many hearts which mourn his loss. It remains for us to remember his example and to strive to emulate his labors, so that his life may be renewed in that spirit and power which he has left to us as an heritage.

RESOLUTIONS.

"Having been called to mourn the loss by death of our beloved fellow-member, Professor WILLIAM PROCTER, Jr., we desire to express our deep sorrow and bear testimony to the high attainments and commanding worth of the deceased.

"Resolved, That in the death of Professor Procter, we feel this College has sustained a loss deeply to be deplored, the School of Pharmacy an able instructor, and our profession one of the most ardent and distinguished exponents of that science he so ably illustrated, and to which he devoted his life.

"Resolved, That we will ever cherish the memory of his bright example, his excellence of character in all the relations of life, his perfect integrity, sincerity and lofty purpose, his conscientious devotion to duty, and his faithfulness as a friend.

"Resolved, That the Committee on Deceased Members be instructed to prepare a memoir of Professor Procter for publication, that the history of his useful life, example and eminent services may be preserved and placed among the records of our College.

"Resolved, That a copy of these resolutions be transmitted to the family of the deceased, with the assurance of our heartfelt sympathy in this time of their great and sudden bereavement."

DANIEL S. JONES,
DILLWYN PARRISH,
ROBERT BRIDGES,
CHAS. BULLOCK. } COMMITTEE.

Philadelphia, February 17, 1874.

The reading of these papers was listened to with profound attention, causing a deep feeling of sorrow and sympathy to pervade the meeting, which was heightened by the solemnity of silence. A general feeling of sadness rested on all as the fact manifested itself that henceforth memory must be the only link between us and our ever-faithful and honored colleague.

Charles Ellis bore testimony to his worth and excellence of character, in a few appropriate remarks, and moved that the resolutions be signed by the officers of the College, and published in the daily papers; and also that a copy of them be engrossed, and sent by the Committee who prepared them to the family of the deceased.

Charles Bullock moved that a copy of the resolutions be sent by the Corresponding Secretary to the Colleges of Pharmacy and Pharmaceutical Associations in the United States. These resolutions were both adopted.

A letter was received and read from Joseph L. Lemberger, of Lebanon, Pa., regretting his inability to attend the meeting, and expressive of his sympathy in our great bereavement.

Professor Maisch suggested that it would be necessary to elect some one to fill the office of 1st Vice-President, now vacant, until the annual election in March next, in order that all the signatures of the officers may be affixed to the diplomas of the College soon to be issued to the graduates.

On motion of Charles Bullock, the President of the College was directed to cast a ballot for Peter Williamson as 1st Vice-President, which, being done, Mr. Williamson was declared unanimously elected to that office until the annual meeting in March next.

On motion, then adjourned.

WILLIAM J. JENES, *Secretary.*

Minutes of the Pharmaceutical Meeting.

The regular monthly meeting was held February 17th, 1874. Twenty members present.

On motion, Dillwyn Parrish was elected President, and the minutes of last meeting were read and approved.

Prof. J. M. Maisch presented a drug mill from the Enterprise Manufacturing Co., which is an improvement on the one first produced—the throat having been enlarged, and the whole japanned in black instead of red.

A paper on Pancreatized Solid Fat, by R. V. Mattison, was read, which produced considerable interest and discussion, and one experiment was tried, which resulted in proving that the emulsion was perfectly miscible with water.

A sample of what was called Oregon Balsam of Fir was exhibited, and Dr. W. H. Pile said that an article almost identical to the sample, could be made by the admixture of rosin and turpentine, in proportions that would produce a preparation equal to it in specific gravity.

A specimen of *Cypripedium pubescens*, was also shown by Prof. Maisch, which had been used to adulterate serpentaria.

Mr. Hazard presented to the College a beautifully crystallized specimen of sulphate of iron, which had been made from waste oil of vitriol and scrap iron from galvanizing works.

Prof. Bridges remarked that the copperas made from such iron was very apt to be pure, as it was necessary to clean the iron carefully before galvanizing it.

Prof. Maisch stated that he had successfully utilized spent sulphuric acid from oil of wine operations when in the U. S. Laboratory, and mentioned that B. J. Crew, some years ago, made a remarkably handsome sulphate of iron, by using waste oil of vitriol from petroleum operations.

E. McC. Boring wished to call the attention of the members to the Syrup of Fresh Orange Peel as made by the formula of R. Rother, Chicago. He said that it did not produce a clear syrup, but that the flavor was very agreeable; and that he cut off the outer rind of the orange (rejecting the white portion of the rind), and beat them to a pulp before subjecting to the solvent action of the alcohol.

S. M. McCollin said that he preferred to grate the oranges, mix with sugar and water, and then throw on a thick filter.

Prof. Maisch spoke of a German preparation, which was made by macerating orange peel in wine and afterwards adding sugar.

J. A. Heintzelman thought that the officinal orange syrup was the best, because physicians generally want the bitterness it possesses.

Owing to the lateness of the hour, on account of the College meeting relative to the death of Prof. Procter having been held first, a motion was carried to adjourn.

JOS. P. REMINGTON, Registrar.

Pharmaceutical Colleges and Associations.

COMMENCEMENTS.—The commencement of the Philadelphia College of Pharmacy will be held at the Academy of Music, March 13. Prof. Bridges has been invited to deliver the valedictory address, in the place of Prof. Procter, deceased. The commencement of the New York College of Pharmacy will take place, at Association Hall, March 31st, and Prof. Bedford will deliver the valedictory.

PHILADELPHIA COLLEGE OF PHARMACY.—Mr. Joseph P. Remington, who had been Professor Procter's assistant at his lectures, has been appointed to conduct the examination of the candidates for graduation in pharmacy. The Examining Committee, of which both Prof. Procter and Mr. Remington were members, was then constituted as follows:

W. J. Jenks, S. S. Bunting, Wm. McIntyre, A. P. Brown and Prof. J. M. Maisch.

On the evening of Feb. 11th, a meeting of the students was held to take action in regard to the death of the late Professor Procter. The class was deeply impressed with the loss they had sustained in the death of their valued teacher, whose genial disposition and faithful instruction had endeared him to all who came in contact with him. The following preamble and resolutions were unanimously adopted:

WHEREAS, It has pleased an All-Wise Providence to suddenly remove from our midst our worthy and beloved Professor Wm. Procter, Jr., who has so faithfully filled the chair of "Pharmacy" in this College; therefore, be it

Resolved, That we tender to the afflicted family of the deceased our heartfelt sympathy in their great bereavement.

Resolved, That the students of the College, who have listened with so much interest to his able and instructive lectures, and who feel so deeply indebted therefor, shall ever cherish in sacred remembrance his many deeds of kindness and arduous attempts to engraft in them the knowledge of our profession which he so largely possessed.

Resolved, That in the death of our esteemed Professor, who has so suddenly been taken from us in the midst of his duties, we, the students, have suffered an irreparable loss, and the College has lost an able and devoted fellow-member.

Resolved, That we attend the funeral at the residence in a body, and that a committee be appointed to accompany the remains to their final resting-place.

Resolved, That this preamble and resolutions be published in the different journals of pharmacy and in two of the city papers, and a copy be sent to the family of the deceased, and another to the Trustees of the College.

W. L. Harrison, Chairman; H. B. Hutchinson, Geo. C. Lescher, D. Ackerman, Jr., J. T. Seal, Committee.

FRED. B. POWER, Secretary of the meeting.

MASSACHUSETTS COLLEGE OF PHARMACY.—At a meeting of the Board of Trustees, held February 24th, 1874, Samuel M. Colcord, President of the College, arose and said:

On the 10th day of February, 1874, in the City of Philadelphia, William Procter, Jr., passed from earth to his home in the spiritual world.

Probably no one in this country was so widely known and so dearly beloved by all who knew him as was William Procter, Jr., in all the ranks of the pharmaceutical profession. No pharmacist in this country has written so much, lectured so much, and performed so many public uses as has William Procter, Jr. As a writer, a journalist, a professor of pharmacy, an original investigator, a fearless exponent of Truth and sound doctrine in our profession, William Procter, Jr., stood unequalled. For the past quarter of a century he has been the recognized leader of all the public pharmaceutical work performed in this country.

Under his care the *American Journal of Pharmacy* came to outrank any other pharmaceutical journal in the world. The Philadelphia College of Pharmacy is greatly indebted to him for its success. He was one of the original founders of the American Pharmaceutical Association, and its success more than to any other person is due to the persistent efforts of William Procter, Jr. The United States Dispensatory contains constant reference to him as authority upon many points, and the United States Pharmacopoeia in past years bears the marks of his masterly hands, but not so much as the work of its last revision shows the want of his presence on that Committee. William Procter, Jr., was the most noted man in our profession in this country; his earthly career has closed in the midst of his life of use, at the full height of his popularity; the record of his life is all clean progress, professionally, morally, spiritually; there are left to us no *buts* and *ifs* to mar the glory of his fame; his life has been a life of use, strong and active, nothing of doubt, uncertainty or hesitation, but manly decision and persistent effort ruled his course. Possessing strong individuality, he left his mark upon all his work, but the element of selfishness is entirely wanting in all his associated efforts; every work of a public nature performed by him was done for the sake of use or from a sense of duty; this was his first view as well as his second sober thought. It might have occurred to him "can I afford it?" but never "can I make more money?" As a friend he was firm, constant and true; as an associate he gave more than he received; in conversation he was instructive, agreeable and entertaining; a remarkably good listener as well as a good talker, but whether in thought, word or deed, nothing of virtue value or use was ever sacrificed, diluted or modified for the sake of ornament. The fascination for naked truth with him was just in proportion to its power and force. Speaking for Pharmacy, I know of no man in our country who has done so much for our profession or who has accomplished so much in a life-time. I know of no man who will be missed so much; I know of no man whose place it is so hard to fill; but his life on earth will stand on record as a practical example of what a pharmacist's should be, for our guidance; and to those of us who had the pleasure of a personal acquaintance, the name of William Procter, Jr., will ever live sacred in pleasant memories, honored and cherished as the embodiment of every manly virtue, the highest type of honesty and intelligence as a pharmacist.

Nearly a quarter of a century ago, when the Massachusetts College of Pharmacy was struggling for a place among the institutions of our country, William Procter, Jr., was her friend and counsellor; to the information, advice and encouragement which he has given us, we are indebted for much of our success. We feel this day that we have lost a friend, and while we mourn his loss, we desire to give expression and to offer sympathy to those to whom this severing of human ties and relationship is far heavier than to us. I therefore move the following resolutions:—

Whereas, WILLIAM PROCTER, JR., from a life of great usefulness upon earth has been suddenly transplanted to his heavenly home;

Resolved, That, as members of his profession, co-laborers in the same field of use, we lament our loss and mourn his removal from us.

Resolved, That by this sad event we mourn the loss of one to whom we were endeared by ties of personal friendship; a leader to whom we looked as authority for guidance; a journalist whom we delighted to honor as honest, intelligent and fearless, and an instructor who was thorough, reliable and patient; as a pharmacist living in the enjoyment of the perfect confidence of all who knew him, and perfectly reliable in every respect.

Resolved. That while filled with grief and sorrow at this earthly separation, we acknowledge and humbly bow to the Divine Will, which guides us in our efforts to do right in this world, and removes us from it at the best possible moment.

Resolved, That we tender our most earnest sympathy to the family of the deceased, the wife and children whom he so tenderly loved and cared for; and while we feel keenly the poverty of human consolation, we invoke for them a Savior's blessing and a Savior's care.

GEORGE F. H. MARKOE, *Cor. Secretary.*

NEW HAMPSHIRE PHARMACEUTICAL ASSOCIATION.—A meeting of about fifty pharmacists of New Hampshire was held, in Concord, January 22d, and organized by electing Charles A. Tufts, of Dover, President; C. F. F. Hildreth, of Suncook, Vice-President; G. F. Underhill, of Concord, Secretary, and H. B. Foster, of Concord, Treasurer. An Executive Committee of ten was also chosen. The gathering was considered a preliminary one, which will open the way for an early formation of a State pharmaceutical association. They want a law that will regulate the sale of medicines and allow druggists to sell spirits for medicinal purposes; they strongly oppose that feature of the New Hampshire Prohibitory law that gives one-half of the fines to the informer.

NEW YORK COLLEGE OF PHARMACY.—At the conversational meeting of Feb. 12th, Dr. Fr. Hoffmann delivered a lecture on the application of the microscope in pharmacy and the drug trade, and illustrated his remarks by exhibiting the sections of many drugs by the aid of an oxy-hydrogen stereopticon.

The decease of Prof. Procter having been announced, a Committee was appointed to represent the College at the funeral.

THE NEW JERSEY PHARMACEUTICAL ASSOCIATION held a meeting at Jersey City Feb. 11th, which was well attended. We have not received an account of its transactions, but we are pleased to inform our readers that this Association has at last been successful in obtaining a pharmaceutical law. The "Newark Daily Advertiser," of Feb. 19th, announces this success in the following complimentary remarks:

After five years of hard work and steady perseverance the druggists of New Jersey have obtained the passage of their Pharmaceutical bill. Regularly every year a number of druggists have visited Trenton, urging its passage, but without success, and each year their number has become less and less, as continued defeats disheartened them. At the opening of this session a few druggists appeared, but again left, until Mr. C. H. Dalrymple, of Morristown, alone remained, and he urged the bill vigorously. By dint of carefully explaining it to the members individually he secured its careful consideration and passage. On the bill coming up in the House, having already passed the Senate, Mr.

Hemingway moved to strike out the enacting clause, but withdrew it so that it might be recommitment. Mr. Smith objected, as did Mr. Kirk, the latter gentleman thinking that too many safeguards could not be thrown around the sale of drugs. Mr. Morrow thought the bill a good one, as did Mr. Howell, both gentlemen saying that the druggists should be given the bill, as a means to prevent, if possible, so many poisoning cases as were occurring of late. Messrs. Iszard and Patterson favored the bill. The motion to recommit was lost, as was also an amendment to relieve country storekeepers of having to pay a \$2 charge for license. Mr. Skellinger offered an amendment that the law should not apply to townships of less than 2000 inhabitants, which was lost when the bill was passed, 38 to 19.

MARYLAND COLLEGE OF PHARMACY.—At the stated meeting held Feb. 12th, the following tribute to the memory of the late Prof. Wm. Procter, Jr., was offered by the President, Dr. John F. Hancock:

Gentlemen.—It becomes my painful duty to call your attention to an announcement that must strike keenly and deeply the cords of reverence and sympathy in every heart here present. It is the only sorrow from which the human heart refuses to be severed. A feeling of regret and sorrow comes over us when we see the icy hand of death placed upon a stranger; but what are our feelings when death comes to rob us of dearest loved friends? Can we look at their removal from our midst with hearts unaffected? No! Despite our efforts to disguise our feelings, which on such occasions spontaneously gush forth, and with full knowledge of the terrible power of the unwelcome messenger, our hearts soften with sorrow, and our heads bow in humble yet mournful submission to the will of Him who gives and who takes away. He to whose memory we are called upon to pay tribute was not a friend only but a benefactor also, not simply a benefactor of his personal friends, but also of his race. His escutcheon is as free of stain as is the spotless snow. We could not speak of his faults, were we so inclined, because we know of none. We knew him only as the true gentleman, the confiding and trusty friend, the kind and affectionate husband and father, the devotee of a humanitarian science which in its practical bearings is a part of that profession which the immortal Hippocrates pronounced to be the greatest of all arts. In his profession he was always a consistent, steady, honest and persistent workman. The fruits of his labors are familiar to all. As a pharmaceutical chemist, and as a journalist who recorded facts only so far as he knew them to be such; as a high-minded honorable gentleman, who was unconscious of his own merits because of the simplicity and innocence of his moral nature, the name of WILLIAM PROCTER, JR., will command reverence and respect wherever and whenever his name shall be mentioned in the presence of a pharmacist in any part of the civilized world. Should any person ever manifest so much ignorance as to inquire who was Wm. Procter, Jr., or what he accomplished, refer them to the volumes of the "American Journal of Pharmacy," which he so long edited, and to the Proceedings of the American Pharmaceutical Association, and implore them, not only to consult the general index of the works respectively, to ascertain the vast number of his original contributions, but to turn to the pages and read the communications, which cannot fail to afford much valuable information. If there are any under the sound of my voice who did not know personally our friend and benefactor, he who has done more than any other man in this country to elevate the moral and intellectual standard of pharmacy, by diffusing the purity of its literature, I would respectfully refer them to a fair sample of his unostentatious characteristic language, as shown in his resignation of his position as Editor of the "American Journal of Pharmacy," dated Dec. 27th, 1870, and published in the "Journal" of that year.

After the reading of this communication, notwithstanding the resignation

occasioned expressions of regret on the part of members present, yet they knew the man so well that what he said he had good reason for and meant, though it was an unpleasant duty yet it was incumbent upon them to comply with his request. A similar prompt action was taken when he resigned his professorship in the College, an action on his part greatly regretted by his fellow-members. But did he continue to rest from his arduous labors in the College? No; for we find his accommodating disposition surrendering his hand and heart to the College on the death of his co-laborer and friend, the late Prof. Edward Parrish, and thus we find him in the full armor of his usefulness to within a few hours of his death. It seems that even death had a kind and tender consideration for him; for so tenderly did the messenger come and steal him away, that his family were scarcely permitted to witness the agony of death, and he passed from earth to Heaven more like a midnight dream than a stern reality. Is he dead; he whom we all loved so dearly, and whom we looked to as a father for counsel and advice? It is hard to realize the fact. He is not dead! The purity of his life, and his works (though his body has become as cold and as lifeless as the adamantinerock) will live imperishably in our immortal memories, and, like the brilliant sun, will wax brighter and brighter until the perfect day.

Let us emulate his example. At least, to the younger members of our profession this is possible, remembering always that true genius is not born but made.

Let us resolve at this time that his virtues, industry and honesty of purpose shall serve us as beacons on the bleak shores of the stormy ocean of our lives, so that when the golden bowl is broken and the silver cord is loosed we may join him in the better land.

Further remarks appropriate and eulogistic of the life and character of the deceased were made by Dr. A. P. Sharp and Prof. J. Faris Moore.

The Chair appointed Messrs. Moore, Sharp and Roberts to prepare suitable resolutions, which were approved, as follows:

WHEREAS, It has pleased the Almighty, in the inscrutable ways of his providence, to remove from his sphere of usefulness on earth our well-beloved brother and friend Prof. Wm. Procter, Jr., of Philadelphia; and

WHEREAS, It is proper and becoming that this body, devoted to the advancement of pharmacy, of which science he was such a bright and shining light, should express and make record of its consciousness of the great loss sustained, not only by our brother pharmacists of Philadelphia, but of the profession throughout the land; therefore be it

Resolved, That we have heard, with sincere and heartfelt regret, of the death of Wm. Procter, Jr., and in his demise feel that the cause of pharmacy has lost one of its ablest, most faithful and long-tried representatives; one whose life has been devoted to the interests of our science, and whose only ambition seemed to be to acquire knowledge and proficiency in his profession, that he might the better serve his fellow-workers in the same loved cause.

Resolved, That, as individuals, we who had the pleasure of his acquaintance can but feel that one near and dear to us has been called from our midst, occasioning a void that we look around in vain for one to fill so worthily and so well.

Resolved, That we tender to his sorrowing family our sincere sympathy and condolence in this the hour of their sad bereavement; but while we lament with them the irreparable loss, we mourn not as those who mourn without hope, for we can but feel that, though it is our loss, it is his eternal gain.

Resolved, That these resolutions be spread at large on the journal of the College, and a copy of the same forwarded to the family of the deceased, as evidence of our estimation of his worth and character.

The President delegated Dr. A. P. Sharp, Prof. J. Faris Moore, and Dr. Jos. Roberts to represent this College at the funeral.

Donations were received of "cosmolin," from Messrs. E. F. Houghton & Co., and an improved drug mill, from Enterprise Manufacturing Company, both of Philadelphia, to whom the Secretary was directed to extend the thanks of the College.

The Committee on Annual Meeting named March 19th for holding the same
J. NEWPORT POTTS, Rep. M. C. P.

CHICAGO COLLEGE OF PHARMACY.—At a meeting of the students of this College, held Monday, Feb. 16th, A. D. 1874, the following preamble and resolutions were unanimously adopted:

WHEREAS, We have learned, with unfeigned sorrow, of the death of Prof. William Procter, Jr., of the Philadelphia College of Pharmacy, in which he so ably and faithfully filled the position of "Professor of Pharmacy," and

WHEREAS, The loss of his valuable services to the students, the College, and the profession at large will be difficult to replace; be it therefore

Resolved, That we, the students of the Chicago College of Pharmacy, tender our sincere sympathy to the students of the Philadelphia College of Pharmacy in the loss of so able a teacher, and so true a friend.

Resolved, That we shall ever remember one whose many researches and able efforts in the cause of science and the elevation of the profession have justly entitled him to be acknowledged the "Father of Pharmacy" in America.

Resolved, That we all unite in regretting the loss of one who has been removed so early from the field of his usefulness.

Resolved, Therefore, that a copy of these resolutions be sent to the family of the deceased, to the students of the Philadelphia College of Pharmacy, class 1873-74, and to the "Pharmacist" for publication, and that these resolutions be filed in the archives of this College.

CHAS. M. FORD, }
H. W. BUCHMAN, }
E. L. STAHL, JR., } Committee.
F. S. SMITH, }
CHAS. E. HARLAN, }
GEO. H. ACKERMAN, Chairman.
H. A. WARNER, Secretary.

The students of the Philadelphia College of Pharmacy have requested the publication of this communication in the "American Journal of Pharmacy."

ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.—At the stated meeting of the Executive Board, held Feb. 12th, 1874, a feeling of deep sorrow pervaded every heart on account of the great loss which the Association and the whole pharmaceutical world had sustained in the sudden demise of our eminent member, Prof. Wm. Procter, Jr. To give expression to these feelings, Joseph P. Remington was appointed to deliver an eulogy upon our distinguished member,—who was at once our warm friend, kind counsellor, and noble archetype,—at the public reception to the graduating class to be held on the evening of March 10th, 1874, at 7½ o'clock.

WILLIAM MCINTYRE, Secretary.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—At the pharmaceutical meeting held Feb. 4th, Mr. W. M. Holmes read a note on iodide of iron. A prescription calling for Potass. iodid., $\mathfrak{z}\text{i}$; Ferri iodid., $\mathfrak{z}\text{ss}$; Syrup tolat., $\mathfrak{z}\text{ij}$; Aq. dest., ad $\mathfrak{z}\text{iv}$, was compounded by rubbing the iron salt with some reduced iron and water, filtering, adding the potassium salt, and then the syrup; a precipitate occurred in a few minutes. But if the syrup was added before the iodide of potassium, the mixture remained clear for several hours, and permanently clear if the free alkali of the iodide of potassium was neutralized by a little citric acid. The author suggests, instead of dispensing solid iodide of iron in mixtures, to dissolve an equivalent quantity of iodine in water, using an excess of reduced iron.

An interesting discussion followed involving the question whether the pharmacist is justified in such cases to make a slight addition to prevent a decomposition which would not occur if the materials were chemically pure. The majority of the speakers seemed to take this view, but the President, Mr T. H. Hills, suggested that the prescribing physician be informed of this necessary addition.

Messrs. Rimmington, Williams and Hills spoke of the tasteless iron preparations as recommended by Mr. J. L. A. Creuse (see Amer. Jour. Phar., 1873, p. 214 and 385). These being almost tasteless, beautiful and permanent compounds, they were recommended to be included in the proposed additions to the British Pharmacopœia, if this would not interfere with any patent right.

Mr. Bland called attention to the alkaline reaction of all commercial iodide of potassium, and believed there was difficulty in getting large-sized crystals when the salt was perfectly pure. Mr. Williams said it was quite true that if the solution was perfectly pure, bad and ill-formed crystals are obtained which the public will not have; in fact, it seemed to be the rule that the more impure the solution the better the crystals. Mr. Rimmington said that Mr. Southall had some years ago manufactured iodide of potassium in very large and transparent crystals; but Professor Redwood said that all specimens he had ever seen had an alkaline reaction.

Professor Bentley referred to *Larch bark* and *Areca nuts*, which are to be included in the forthcoming additions to the Pharmacopœia. The former is used as a tanning material, but has been recommended by Dr. Greenhow, about ten years ago, in the form of tincture, for checking profuse perspiration and in certain bronchial affections; in Ireland the bark, divested of its outer layer, is frequently employed in similar cases. *Areca* or betel nut is known in Great Britain for the charcoal it yields, and is used in the preparation of Ceylon catechu, which was formerly official in the Edinburgh Pharmacopœia. *Areca* nut has also been used as a vermifuge, and is a popular remedy in India, though it is but slightly spoken of in the Pharmacopœia of India.

Professor Redwood said that a tincture made of one part of larch bark to eight of rectified spirit had been somewhat extensively used in Ireland, the dose being 20 to 40 minims. *Areca* nut is used in the form of powder in doses of four to six drachms, mixed with milk, and is regarded by some eminent members of the Medical Council as the most valuable remedy known at the present time for the expulsion of tapeworms.

Mr. Mackay has made tincture of larch bark as far back as 30 years ago. The bark should be deprived of the outer portion, and of the woody fibre sometimes adhering to it.

Professor Attfield asked whether the Pharmacopœia would indicate the fineness of powder in which areca nut was to be used; but Professor Redwood thought this not likely, except, perhaps, for the purpose of making tinctures, &c.; however, some pharmacists laid great stress on the very minute division of substances administered as powders, and now-a-days, as a rule, they were reduced to the finest state of division.

Mr. Urwick had found finely powdered areca nut without effect on pointer dogs, while the coarse powder proved effectual.

Mr. Umney said areca nut could be obtained in a powder which would pass through a sieve having 140 meshes per linear inch, powdered rhubarb through a sieve of 180 or 190 divisions, while powdered caraway would scarcely pass through a sieve much finer than 60 meshes per inch.

Mr. Candy said that the astringency of larch bark was presumably due to tannin. This, therefore, seemed to be a step in the opposite direction to what has been sometimes advanced, namely, the employment of active principles instead of crude substances. It seemed that the former were not always as active as the latter, or there would be no necessity for introducing this article.

Editorial Department.

PROSECUTION UNDER THE NEW YORK PHARMACY ACT.—In the early part of January, eight apothecaries, who had refused to be registered in compliance with the law, were arrested, and afterwards fined \$50 and costs.

LEGAL DECISION AGAINST THE PROPRIETOR OF A QUACK MEDICINE.—We are indebted to the *American Agriculturist* for an advance proof of the following decision by Judge Davis, of the Supreme Court in New York:

JANUARY GENERAL TERM.

DAVID RICHARDS,	} DAVIS, P. J. DONOHUE AND DANIELS, J. J.
<i>Plff. and Appt.</i>	
VS.	
ORANGE JUDD AND OTHERS,	
<i>Def. and Respt.</i>	

Appeal from order of Special Term, striking out the complaint in this action, and dismissing the same with costs, for plaintiff's refusal to answer certain questions propounded to him as a witness pursuant to the order of the Court.

JOHN L. WALKER for plaintiff; AMOS G. HULL for respondent.

DAVIS, P. J.:

The plaintiff alleges in his complaint, in substance, that he is and has for many years been the sole proprietor, owner and manufacturer of articles of medicines and merchandise generally and publicly known as Dr. Richau's Golden Remedies, which he has for ten years last past manufactured and put up and offered for sale and sold, and that by means of extensive advertising and the good qualities of such Golden Remedies he has secured large sales and profits.

He also alleges that the defendants are publishers of a monthly magazine, known as the *American Agriculturist*, and having a circulation monthly of two hundred and fifty thousand copies; that in November, 1872, the defendants published in their said magazine a certain libelous article in the following words: "Sundry Humbugs.—Our newer readers keep inquiring about the trustworthiness of this, that, and the other doctor for various diseases. We answer that every so-called physician, every medical institute or college or association that advertises medicine or medical advice, by circular or otherwise, is a quack—in short, a swindle. The whole tribe of those who advertise 'marriage guides,' 'female medicines,' 'advice to the young,' 'errors of youth,' 'eye doctors,' 'ear doctors,' 'consumption cures,' 'cancer doctors or medicines, etc., etc., are positively quacks and imposters, to whom it is unsafe to address even a letter of inquiry; also that the 'Golden Remedies' inquired about by several are nonsensical quackery. We have not room for a lot more of humbugs on hand, but will renew the war upon them in the next volume, and, as hitherto, we expect to shield at least all our readers from swindlers, and through them many other people."

The plaintiff alleged also that the defendants, by means of these words published as hereinbefore set forth, insinuated and meant to be understood by those to whom it was published and the public at large, as charging the plaintiff with being a quack, imposter and swindler, and that the said "Golden Remedies" manufactured solely by the plaintiff were wholly valueless and useless, and possessing no medicinal qualities whatever, and that by means of the publication the plaintiff has been injured in his reputation and in his business, and been deprived of custom and trade, and lost the sale of goods and profits which he would otherwise have made, to his damage, twenty-five thousand dollars.

The defendants, in their answer, admit in substance that they are publishers of the *American Agriculturist*, and that in December, 1872, they published the article under the caption of "Sundry Humbugs," above set forth. They allege also that the publication is substantially true, and was published with good motives and for justifiable ends. They also set out *in extenso* the circulars sent forth by the defendant with his "Golden Remedies," in which the plaintiff describes himself as a physician who has had a general practice in all parts of the world; and aver various facts tending to show that the alleged medicines of plaintiff are valueless as remedies for disease, being compounds costing but a few cents per bottle, and selling at several dollars, which the public would shun if the constituent facts were known.

The defendants propose in their answer to give evidence of all the various facts alleged both in justification and in mitigation of damages.

Issue being joined, the defendants upon affidavit procured an order and summons for the examination of plaintiff as a witness on their behalf before the trial.

On such examination the plaintiff testified that a bottle marked "Doctor Richan's Golden Remedy, No. 2," was one of the medicines he advertises and vends to the public.

He was then asked of what Balsam No. 2 is composed. He refused to answer the question, on the ground that it was irrelevant, immaterial and a secret in his trade.

The judge directed the plaintiff to answer the question.

He then answered: "It is a secret compound composed of various ingredients which possess great medicinal properties," and refused to state the names of the ingredients.

He then gave evidence showing that he was not a doctor of medicine, and had never received a diploma, and had not been engaged in a general practice of medicine in any part of the United States.

He then testified that he advertised "Doctor Richan's Golden Elixir de Amour, or Elixir of Love," and on being asked "of what is it composed?" he refused to answer.

The Court at Special Term, after argument, ruled that the plaintiff must answer the question that had been propounded; and on the question being repeated to him he answered: "It is a secret compound of various ingredients which possess great medicinal properties;" and refused absolutely to give any other answer.

On presentation of these facts to the Court it was held that the answer was evasive; and the plaintiff, under the advice of his counsel, refusing to give any other answer, the Court ordered his complaint to be stricken out and dismissed with costs.

By the allegations of his complaint the plaintiff had invited an issue as to the medicinal qualities and value of the "Golden Remedies."

The statement of the alleged libel, so far as it pointed directly to plaintiff or his remedies, was to the effect that his "Golden Remedies" are "nonsensical quackery," and it is chiefly of this statement that the plaintiff complains.

The defendants undertake by their answer to show that this statement is true.

No one can read the circulars of the plaintiff, as proved by himself on his examination, without observing the importance of the investigation sought to be made. It was competent to disprove the assertions of the circulars and of the complaint by ascertaining the ingredients of the several compounds for the purpose of showing that they possess no such medical virtues as are claimed by plaintiff. For instance, he asserts in his circular that his "Elixir of Love" is composed of the most powerful ingredients of the vegetable kingdom—harmless, but speedy in restoring healthy action." And again: "It is the fountain of youth to old age, the rejuvenator of pristine vigor in the young; to the barren woman of our land it is a special blessing." Indeed, it is impossible to read the vulgar and in many respects shameful assertions and instructions that accompany the compounds of plaintiff without being struck with the vileness of the impostures. That he can bring an action of libel for injury alleged to be done to his trade in his medicines by denouncing them as arrant quackery, and at the same time protect himself against exposure by claiming them to be valuable secrets, is a proposition that cannot be maintained. *Byrn vs. Judd*, 11 Abbots, New Series; 11 New York, 347, New Series.

In the laudable exposure of such "humbugs" as the pretended medicine of plaintiff and others, the defendants take upon themselves great risks, and subject themselves to the annoyance of suits; but I think they are not exposed to any danger that courts will interpose any shield for the protection of parties guilty of fraud and deception of the public.

If the plaintiff did not choose to try the question of the true character of his "Golden Remedies," he should have kept out of a court of justice.

The order of the Court below was correct, and should be affirmed with \$10 costs and disbursements.

OBITUARY.

PROFESSOR WILLIAM PROCTER, JR., died February 10th, of heart disease, at the age of 57. On the preceding evening he had lectured at the College, and retired near midnight apparently in his usual health; about half an hour later he had breathed his last. Attended by numerous friends, by the students and members of the College, and by delegations from the Maryland College, the New York College, and the New Jersey Pharmaceutical Association, his mortal remains were conveyed to Mount Holly, N. J. For a period of thirty-seven years his labors have aimed at raising the status of pharmacy, and have been of such importance and lasting value that the deceased may justly be regarded as the father of American pharmacy. In a future number we shall give a biographical sketch, referring for the present to the obituary notices contained in the preceding pages.

LABORATORY NOTES.

By E. B. SHUTTLEWORTH.

Use of Glycerin in the Estimation of Tannin.—The estimation of tannic acid by means of a solution of gelatin is generally a tedious and troublesome process. The precipitate formed is so slowly deposited that, without resorting to a filtration almost as inconvenient, it is difficult to determine the exact point when a sufficient quantity of the precipitant has been added, as also to separate the precipitate at the close of the operation. In order to ascertain the completion of the process, Wheeler* suggests that a tube, loosely closed at the bottom with sponge, be dipped into the solution; the filtered liquid which enters the tube is then tested with a further quantity of the gelatin solution. Muller† accelerates the clarification of the liquid by adding a certain proportion of alum. I have found that both these ends may be more easily accomplished by adding to the tannin solution a small quantity of glycerin. The precipitate by gelatin subsides more or less readily according to the concentration of the solution.

As I have noted in a previous paper,‡ the precipitation of tannin may be altogether prevented by employing a very large proportion of glycerin, so that it is probable that in using a lesser quantity a small proportion of the precipitate is retained in solution. In comparative examinations—and it is chiefly in this manner that estimations are made—this is of no consequence, as the loss may be determined when making the standard solution. Even with simple water the indications are not altogether reliable, and a certain allowance must be made, as the precipitate is not absolutely insoluble in water without the tannin is in considerable excess.

Fluorescence of the Acid Residue from the Manufacture of Ether.—Those who are practically acquainted with the preparation of ether may have noticed the extraordinary fluorescent appearance of the sulphuric acid remaining at the close of the process. I am not, however, aware that this property has ever been noted in any of the journals, and to those engaged in researches on fluorescence the fact may be of interest.

* Mem. Chem. Soc. iii, 319.

† Chem Centr. 1859, 42. Watts' Dict. ii, 765.

‡ Can Pharm. Jour. vii, 229.

The alkaline tincture of the root of *Gelsemium sempervirens*; solutions of chlorophyll, sulphate of quinia, asphaltum or æsculin; oil of peppermint treated after Flückiger's method; various petroleum products, or other liquids in which fluorescence is very strongly marked, do not compare in intensity with the ether residue.

Viewed by reflected light, the liquid is of a deep green color, and appears to be perfectly opaque; by transmitted light it is brownish-red. The degree of fluorescence is influenced by the purity of the alcohol which has been treated by the acid; the intensity increasing with the impurities present. Methyl compounds, especially, have an intensifying effect.

Cement for Affixing Labels to Tin or other Metallic Substances.—Of the various formulæ which have been published, none have given such satisfactory results as that in which tragacanth mucilage is mixed with honey. Paste of this kind has, however, two disadvantages—tardiness in drying, and susceptibility to damp. I have found that by incorporating or triturating with the mixture a considerable proportion of dry wheaten flour, these disadvantages are very much reduced, and the adhesiveness and permanent tenacity of the film are perceptibly improved. I think that those who try this plan will have every reason to be satisfied with it. The following proportions may be used:

Tragacanth Mucilage,	10 parts,
Honey,	10 parts,
Flour,	1 part.

A cement possessing better damp-resisting properties, but having the disadvantage of not being permanently adhesive where the surface of the metal is at all greasy, and also being objectionable on account of its dark color and liability to disfigure the label, is formed by boiling together, until solution is effected, two parts of shellac, one of borax and sixteen of water. Shellac dissolved in alcohol will produce a cement having perfect damp-resisting properties, but the film is very apt to separate from a polished surface. Flour paste, to which a certain proportion of sulphuric acid has been added, makes a lasting paste, but the acid often acts upon the metal—especially if exposed to damp—and unsightly stains are produced, which penetrate the label. This paste cannot be used for ordinary colored papers, or with some colored inks. Mixtures of flour paste with molasses, syrups

or honey have been recommended, but are never reliable.—*Canadian Pharm. Journ.*, 1874, p. 305.

NOTES ON THE ARECA PALM.

Areca Catechu, L.

By JOHN R. JACKSON, A. L. S., Curator of the Museums, Kew.

Some interest having lately arisen amongst pharmacists with regard to the Areca palm (*Areca Catechu*, L.) owing to its proposed introduction into the British Pharmacopœia as an official plant, a few notes on the tree itself and its uses may not be out of place.

The Areca palm is a handsome tree growing to a height of from forty to sixty feet, with a slender, erect trunk, averaging from one to two feet in circumference. It has regular, pinnate leaves, and long, linear leaflets, of a rich, dark-green color. The circumference of the trunk is annulated or distinctly marked with the scars of the clasping petioles of former leaves. The fruits are each about the size of a hen's egg, consisting of a fleshy-looking drupe, which, however, on cutting is found to be very fibrous, containing a seed about the size of a nutmeg, and, like that well-known spice, ruminated or marked with thick, reddish-brown irregular lines throughout its entire substance. These fruits are borne in large bunches, springing from the crown of leaves. The spathe itself is used in some parts for making drinking vessels, for nailing over the bottoms of boats, and for various other purposes.

The tree is known best as the betel-nut palm, and is cultivated in nearly all the warmer parts of Asia for the sake of the seeds, which are not only chewed in large quantities by the natives in countries where they grow, but are shipped to countries where the palm is not cultivated. The annual average produce of one tree is said to be about three hundred nuts. The tree is largely cultivated all over India, as well as in China, but is more abundant, perhaps, in Malabar, North Bengal, the lower slopes of the mountains of Nepaul, and the south-west coast of Ceylon. In Travancore alone there are nearly ten millions of these trees, the annual value of the produce of which is estimated at £50,000 sterling. It is said that about 80,000 piculs of the nuts are annually produced on the coast of Sumatra. Many varieties of the betel-nut palm are known to the natives under different local names; the nuts also vary much in size, but their quality

depends upon their appearance when cut through, "intimating the quantity of astringent matter contained in them. If the white or medullary portion which intersects the red or astringent part be small, and has assumed a bluish tinge, and the astringent part is very red, the nut is considered of good quality; but when the medullary portion is in large quantity the nut is considered more mature, and, not possessing as much astringency, is not esteemed so valuable."

The nuts are usually gathered between the months of August and November. The seeds are removed from the husk and boiled in water. In the first boiling the water becomes red and thick, and this is afterwards evaporated into catechu, but whether it is imported into this country as a commercial article is uncertain. The mode of collecting the catechu in Mysore is thus described: "The nuts are taken as they come from the tree, and boiled for some hours in an iron vessel. They are then taken out, and the remaining water is inspissated by continual boiling. This process furnishes *kossa*, or most astringent *Terra japonica*, which is black and mixed with paddy husks and other impurities. After the nuts are dried they are put into a fresh quantity of water and boiled again; and this water being inspissated, like the former, yields the best or cleanest kind of catechu, called *coony*. It is yellowish-brown, has an earthy fracture, and is free from the admixture of foreign bodies."

For the purpose of chewing, the nut is cut into narrow strips and rolled up with lime in the leaves of the betel pepper. The mixture has a hot acrid taste, and aromatic and astringent properties. The habitual use of the betel-nut is considered by the natives to be very wholesome, but the effects are said by some to be due as much to the ingredients used with it as the areca nut itself. Its constant use causes the teeth to become black and the mouth and lips of a brick red color. In some parts of China the nuts, bruised and powdered, are mixed with the green food given to horses, and they are thus considered a preventive against diarrhoea. In the north of China small pieces of the nut are boiled and the decoction is taken as a domestic remedy in various visceral affections.

Though the use of the betel as a masticatory turns the teeth black, it is said to preserve them from decay in a remarkable manner, and this may be the reason why some English chemists have introduced the pulverized charcoal into this country as a tooth powder.

In Borneo the flowers, which are fragrant, are mixed with medi-

cines and used as charms for the cure of many diseases. In some parts of India the juice of the young tender leaves mixed with oil is applied as an embrocation in cases of lumbago, and a decoction of the root is a reputed cure for sore lips, so that whatever may prove to be the value of the areca nut as an anthelmintic in this country, it is certain that the tree is much esteemed for its numerous uses in the East.—*Pharm. Journ. and Trans.*, Feb. 28, 1874.

METACHLORAL AND CAUSTIC PENCILS OF CHLORAL HYDRATE.

M. Limousin exhibited at the Société de Thérapeutique, Paris, some specimens of metachloral and also of pencils of hydrate of chloral. The metachloral had been obtained by treating one part of hydrate of chloral with three parts of concentrated sulphuric acid, and washing the insoluble product obtained as long as the washings gave an acid reaction. The metachloral was afterwards dried with chloride of calcium, and reduced to a fine powder. The caustic pencils were obtained by mixing the hydrate of chloral with a small quantity of gum, and then coating them with a slight layer of paraffin, in order to preserve them from the action of damp air.

Metachloral, or insoluble chloral, has the same formula as anhydrous chloral (C_2HCl_3O), of which it is an isomeric modification. It is less caustic than hydrate of chloral, and it has the great advantage over chloral of not attracting moisture, and consequently allowing the treatment to be confined to a limited surface.

M. Dujardin-Beaumetz said that he had employed metachloral and recognized in it considerable advantages; he preferred it to iodoform, and he had obtained with it equally satisfactory, if not superior, results. Moreover, metachloral did not present the inconvenience which resulted from the penetrating and insupportable odor of iodoform. M. Beaumetz added, that in any case where the action of the powdered metachloral was found to be too irritating, its energy might be mitigated by mixing with it a certain quantity of lycopodium or other inert powder. He added that he had used the pencils of hydrate of chloral with advantage for the superficial cauterization of certain ulcerations. He also introduced them into the natural cavities, or into the fistulous passages of white tumors, to obtain the diminution and sometimes the cessation of local pain.—*Pharm. Journ. and Trans.*, Feb. 21, 1874.

TINCTURE OF PHOSPHORUS.

This has lately been occasionally prescribed in Great Britain and in this country. The editor of the *Pharm. Journ. and Transactions*, who had been applied to for its formula, says in the issue of Feb. 21:

"The following formula given by Dr. Ashburton Thompson, in a paper 'On the Use of Phosphorus in Neuralgia,' published in the *Practitioner* last October, is probably what is sought by our correspondent:

Phosphorus,	.	.	.	1 grain.
Absolute Alcohol,	.	.	.	5 drachms.
Glycerin,	.	.	.	1½ ounces.
Spirit of Wine,	.	.	.	2 drachms.
Spirit of Peppermint,	.	.	.	2 scruples.

'Let the phosphorus be dissolved in the alcohol with a little heat: at the same time warm the spirit and glycerin together. Mix the two solutions while hot, and add the spirit of peppermint on cooling. One drachm of this mixture contains one-twelfth of a grain of pure phosphorus. These ingredients form a mixture perfectly bright and clear, possessing almost no phosphoric odor or taste, and of a high degree of stability, even under exposure to light. The amount of spirit gives it a burning taste which may be sometimes objected to; but if the patient be warned of this, probably no further remark will be made about it. So far from causing offensive eructations, it seems to have a tendency to arrest existing flatulency.' "—*Pharm. Journ. and Trans.*, Feb. 21, 1874.

CROTON CHLORAL.*

By ALFRED H. MASON, F. C. S.

(Vice-President of the Liverpool Chemist's Association.)

A new remedy, with chloral as its basis, and introduced by the discoverer of the therapeutical application of hydrate of chloral, naturally commands attention. At one of our general meetings in 1872 session, I exhibited a specimen of this, then new, compound, named by Professor Liebreich croton chloral hydrate.

Within the last few months this medicine has commanded much

* Read at the evening meeting of the Liverpool Chemist's Association, Feb. 12, 1874.

more of the attention of medical men, so that the requirements of it somewhat exceed the first demand for its predecessor when sold at about the same price.

Crotonic chloral was discovered somewhat accidentally by Drs. G. Kraemer and A. Pinner.† These gentlemen were undertaking experiments on the action of chlorine on aldehyde, chiefly in the hope of thus obtaining chloral, and of being able to utilize the valueless residue from the first runnings obtained in the distillation of crude spirit, which consists mainly of alcohol, aldehyde and paraldehyde.

Chlorine was passed into aldehyde, at first carefully cooled in a freezing mixture, and only heated to 100° at the close of the reaction. The first few bubbles caused the separation of a small quantity of solid met-aldehyde, whether originally present in the aldehyde or formed by the reaction, is undecided. After a short time evolution of hydrochloric acid set in and every trace of chlorine was absorbed. With 100 grams of aldehyde, at the end of twenty-four hours, no further absorption took place even at 100°. The resulting brown mass consists of two layers: a lower, darker, almost solid; and an upper, lighter-colored, liquid layer. The latter is a saturated solution of hydrochloric acid and the bodies of the lower layer in water. As it was found impossible to separate these two well, the whole was submitted to distillation. A considerable quantity passed over between 90° and 100°; the thermometer then rose rapidly to 160°, and the main product distilled over between this and 180°; the temperature again rose to about 240°, but only decomposition products were obtained, and a considerable carbonaceous residue remained in the flask. By means of fractional distillation the portion boiling at 160° to 180° was quickly purified, and a body boiling at 163° to 165° was isolated, which proved to be crotonic chloral.

The specimen I have here was produced by passing perfectly dry chlorine gas over pure aldehyde (C_2H_4O)—the action is very violent, and many precautions have to be taken to prevent explosion and to condense the volatile products of the reaction, and still to allow the enormous quantities of hydrochloric acid gas to escape. After a time the liquid thickens; at this stage the current of chlorine can be passed through the liquid. After another interval it becomes necessary to warm, and at last to boil the liquid through which the chlorine is

† Ann. Ch. Pharm., clviii, 37.

passing. At length hydrochloric acid ceases to be evolved, and crude croton chloral is obtained—the process taking about forty-eight hours to complete. This crude body is *mainly* ordinary chloral, but mixed with a variety of other products. By fractional distillation and treatment with sulphuric acid—true croton chloral ($C_4H_5Cl_3O$)—trichlor. crotonic aldehyde is obtained. This is a dense oily liquid of peculiar odor, somewhat recalling ordinary chloral: treated with a considerable excess of warm water it hydrates and dissolves, and, upon cooling, croton chloral hydrate ($C_4H_5Cl_3O, H_2O$) is deposited, but still in a crude form, most rank and offensive in flavor. It has to be purified by rather a tedious process, and is obtained, when pure, in beautiful white silvery crystals, with a sweetish melon flavor, which melt at $78^\circ C$.

From this it will be quite evident (and it is probably wise to note it) that this body does not bear any relation to croton oil, or crotonic acid, obtained therefrom, although its chemical constitution proves it to be the chlorated aldehyde of crotonic acid.

Croton chloral is the substance represented by the same term in the allyl (C_3H_5) group that chloral has in the ethyl (C_2H_5) group. Its outward appearance differs from hydrate of chloral by the salt being much lighter, and in flocculent silvery crystals—by its being almost insoluble in cold water and very soluble in alcohol; it is soluble in hot distilled water, and rendered more easily so by the addition of 25 per cent. of pure glycerin; it is insoluble in chloroform.

It will be remembered that hydrate of chloral owes its value as a medicinal agent to the supposed elimination of chloroform when it comes in contact with the alkalies of the blood, it having been shown that by reaction with alkalies chloroform is produced. Crotonic chloral, when subject to the influence of an alkali, first forms allyl-chloroform, a trichlorated body which is rapidly decomposed into a bichlorated substance called bichlor-allylene. In a communication to the *British Medical Journal*, December 20, 1873, Dr. Liebreich says:—"Both chloroform and trichlorated substances act in the first stage upon the brain; in the second, on the spinal cord; in the third, on the heart."

Although Dr. Liebreich's theory has met with and still finds general favor, there are many medical men who think it has not any valid support, believing that chloral exercises a specific action of its own upon the organization, which is not to be reasoned out from an exclusively chemical basis.

The medicinal advantages of hydrate of croton chloral over ordinary hydrate of chloral are : 1st. In cases where hydrate of chloral is inapplicable on account of heart-disease (it does not interfere with the action of the heart). 2d. In cases of neuralgia in the district of the nervus trigeminus (it is a remarkable phenomenon that when given in small doses it produces anæsthesia of the fifth nerve, singling out one nerve, and that one alone, while the sensibility of the body generally and pulse and respiration remain unaffected). 3d. In cases where very large doses are necessary to produce sleep, here Liebreich recommends the addition of croton chloral to hydrate of chloral.

Dr. Burney Yeo, of King's College Hospital, London, etc., is making a systematic investigation on the value of this medicine, and he lays his first communication in a paper published in the *Lancet*, January 31, 1874; he administered it in six different classes of cases, and gives details of each. The results he has arrived at are, that in croton chloral we possess a remedy of remarkable efficacy in some cases of neuralgia of the branches of the nervus trigeminus, and that it also has the power of affording relief in other obstinate forms of neuralgia; that it is of use in certain cases of diffused muscular pain; that there is scarcely any remedy that is likely to prove more valuable for the relief of the distressing night cough of chronic phthisis. Its efficacy in procuring sleep seems very variable in moderate doses; its effect in purely rheumatic cases is scarcely appreciable, while for hysteria it is of little or no use.

Dose.—Dr. Yeo says :—" I am satisfied that in dealing with this substance we must give an unusually wide range to the dose, for its effects vary greatly. The doses I have given varied from one to ten grains. In delicate females I have found very decided effects from doses of two and three grains ; in strong males a dose of ten grains is often required to produce any appreciable effect. As may be expected, persons who have been accustomed to the use of anodyne medicines require larger doses than others."

The dose must always be proportionate to the severity and long continuance of the pain. I would advise that it should be always given in moderate and quickly repeated doses, until the amount of "tolerance in the medicine in each particular case has been discovered. In severe neuralgias, from two to five grains may be given every hour, or the smaller dose every half hour, until fifteen grains

have been taken. At present I do not think it safe to go beyond this dose."

I have made several experiments with different solvents to present this medicine in a convenient form for dispensing, and before seeing Dr. Yeo's paper I found that the addition of glycerin was of great assistance in making the solution. I can fully endorse his decision. The following formula yields the strongest solution that is permanent:

Croton Chloral Hydrate,	64 grains.
Pure Glycerin,	$\frac{1}{2}$ ounce,
Hot Distilled Water,	$1\frac{1}{2}$ "

A syrup can be made containing two grains of croton chloral hydrate in the fluidrachm, by adding four ounces of simple syrup to the above solution, and the disagreeable taste may be removed by any flavoring the pharmacist sees fit to add.—*Chemist and Druggist*, Feb. 14, 1874.

RHEUM OFFICINALE.

BY PROFESSOR BAILLON.

The following information respecting the new species of *Rheum*, which is now considered to be the true origin of the officinal rhubarb, has been supplied by Professor Baillon to M. Regnaud for insertion in a new edition of Soubeiran's "Traité de Pharmacie."*

"Besides the *Rheum Rhaponticum*, which yields the Rhapontic rhubarb, Linnæus recognized four species of the genus *Rheum*, to which have successively been referred the origin of the true rhubarbs of China and Russia. These were the *Rheum Rhabarbarum* (afterwards named *R. undulatum* by Linnæus himself), *R. compactum*, *R. palmatum* and *R. Ribes*. The latter, to which has been attributed the origin of Persian rhubarb, or rather of the products which are received through Persia, has never been more than a culinary herb. As to the three other species, they have all contributed (from the root) certain European and native rhubarbs.

"A species more recently discovered in India, *R. Emodi* or *R. australe*, has, like the preceding, been considered to yield the Chinese and Russian rhubarbs; but it would appear that it only produces a kind peculiar to India.

"As to the true plant, a native of Thibet, which furnishes to com-

* "L'Union Pharmaceutique," vol. xv., p. 21.

merce both the Russian and Chinese rhubarbs, it has only been known since 1867, in which year M. Dabry de Thiersant, consul-general of France at Shanghai, procured from Thibet some stalks of the species which yields this valuable drug, and which, cultivated in the garden of the Faculty of Medicine at Paris and in the Vallée de Montmorency by M. Girandeaup, have received from M. H. Baillon the name of *Rheum officinale*. It is a very large species, exceeding a man in height, and remarkable for the considerable development of its inflorescence. The flowers are whitish, having a very deeply concave receptacle, with a marked perigynic insertion of the stamens, which in other respects resemble those of all the genus *Rheum*. The gynæcium is inserted profoundly in the most depressed portion of the receptacular cavity, and the edges of this cavity are furnished with well-developed unequal glands of a beautiful green color at their summit. The leaves of this species answer perfectly to the indications formerly given by Bokharian and Chinese merchants to Pallas and others concerning the true officinal rhubarb plant, namely, that the leaves have a limb of a delicate green color, in shape like an open fan, and also as analogous as possible to that of the leaves of the *Ricinus communis*. It is by this that the species is especially distinguished from *R. palmatum*, to which more than any other the origin of this medicament has been referred in recent times, upon the authority of Guibourt. But the leaves of the latter are whitish, unequally trilobed, and more or less pointed at the top. The *R. officinale*, however, belongs to the same botanical section as *R. palmatum*, as well as *R. hybridum* and *R. dentatum*, which are different plants, but have the same nervation. Here the nerves diverge at starting from the base of the limb, they are then palmate, and the two lateral nerves are destitute on the outside, for a certain distance from their base, of all parenchyma. Above this point the base of the parenchyma forms a kind of auricle, which renders the limb markedly cordate at the base. The dimensions of the limb extend to nearly a metre in each direction; it is, however, a little broader than it is long, and the petiole is about the same length. In the plants that have been raised, some leaves have been noticed which were more than a metre and a half long. Their edges are unequally divided into triangular lobes a little unequal among themselves, and the nerves, ramified and prominent beneath, are in this species, together with all the surface of the parenchyma, entirely covered with a fine white down. When

the plant has become fully developed it has scarcely any roots, for these are gradually destroyed, and the plant draws its nourishment from the soil only by small adventitious roots which could not be employed in medicine. But, contrary to the other species enumerated, and of which the root can be prepared and employed, this develops above ground a stem and cylindro-conical branches, 20 or 30 centimetres high, and of the thickness of an arm or a leg. These are the only portions which, cleansed from the so-called bark, divided transversely and longitudinally, and properly dried and prepared, can be used in medicine. They bear leaves, and after the fall of these, there remains on the surface only the brown dried base of the petioles, together with the remains of the ochrea; these vestiges together constitute the pretended bark.

"In the axil of each of these aërial leaves there is necessarily a bud. These acquire frequently a considerable development, and are elongated into leafy branches; such is the cause of the ramification of the aërial portions of this plant. Each of these buds, detached at a suitable season, will in its turn easily take root from its base, and may thus be used to multiply the plant. Since each of these buds sends off a collection of cellular, fibrous and vascular elements, which it directs obliquely across the true fleshy, spongy bark, towards the ligneous axis of the stem, this, as well as the large branches, is permeated by oblique systems having the same structure as the branches. The presence in the true Thibet rhubarb of the stellate spots which are seen in sections, answers, therefore, precisely to the morphological nature of the portion employed as a medicament."—*Pharm. Journ. (Lond.)*, Feb. 28, 1874.

ADULTERATIONS OF COFFEE, TEA AND PEPPER.

At a recent meeting of the Chemical Society, London, Mr. J. Bell gave some interesting particulars about the adulteration of these articles.

The adulteration of coffee can only be successfully accomplished after it is roasted and ground, but has, perhaps, been carried to as great an extent as in almost any other article of food. A very simple way of detecting the presence of chicory in coffee is to sprinkle a little of it on the surface of water in a test tube or wine glass, when each particle of chicory becomes surrounded with an amber colored

cloud, which spreads in streaks through the water until the whole acquires a brownish tinge; with pure coffee, however, no cloud is produced until the lapse of about a quarter of an hour. Another method of detecting adulteration is by the depth of color obtained by the infusion of a given weight of the suspected article in water, and by the density of the infusion. The use of the microscope, however, is indispensable. The ash of coffee, remarkable for the minute quantity of silica it contains, and for the absence of soda, afforded a valuable indication of its purity.

Adulterations of Tea.—Tea is adulterated to a very large extent, not only with leaves of various kinds, including exhausted tea leaves, but also with inorganic substances, such as quartz, sand, and magnetic oxide of iron; these latter substances are rolled up inside the leaf, and one sample of green tea examined was found to contain no less than 20 per cent. of quartz and 8.6 of the magnetic oxide. The latter may readily be separated by grinding up the tea and removing the magnetic oxide with a magnet. The facing employed for green tea usually consists of French chalk and Prussian blue. In the preparation of exhausted tea leaves, they are rolled up with gum water and then dried, catechu being added in some cases to restore the astringency. The article known as the "maloo mixture" consists essentially of exhausted tea leaves. In searching for the presence of leaves other than those of the tea plant, the best method is to heat a small quantity of the suspected tea with water until the leaves are sufficiently softened to admit of being unfolded. They should then be spread out on a piece of glass and carefully examined as to the nature of the serrations and the character of the venation, also the appearance of the epidermis and the stomata, and the peculiarities of the hairs as shown by the microscope.

Adulterations of Pepper.—The two kinds of pepper, known in commerce as black and white pepper, are derived from the same plant, but differ in the latter being bleached, or having the husk removed by washing; but neither kind can be adulterated with success before it is ground. The most common adulterants for ground pepper are linseed meal, the husks of mustard seeds, rice, bean and pea meal, and the flour and bran of the ordinary cereals, ground chilies being added to restore the pungency. Some of these substances can be readily detected by diffusing the pepper in water, and pouring the mixture on

to a muslin sieve. The deep red particles of the chili can then be recognized, and also the camphor-like fragments of rice. The mustard husks are known by their cup-like shape, while the smooth shiny appearance of the linseed readily distinguishes it from the dull brown of the pepper.—*Scientific American*, 1874, p. 197.

GHAZEETPORE ROSE-WATER.

The following interesting information on the cultivation of roses and the preparation of rose-water at Ghazeepore has been taken from the Catalogue of the Indian Department at the Vienna Universal Exhibition, for which it was written by Mr. R. Saunders :

The roses from which the celebrated Ghazeepore rose water is distilled came originally from Bussorah. These roses were first transplanted from Persia, and brought to the ancient, but now ruinous, Hindu city of Kanauj on the Ganges, and thence to Ghazeepore.

Somewhere about a century ago, Shaikh Abdullah (the father of the last Nawab Fuzl Alee Khan) made the first trial of a rose plantation in the vicinity of the city of Ghazeepore. Having experimented on a very limited scale in his own garden, he discovered that the soil of the environs of Ghazeepore was admirably adapted for rose cultivation, and since that period it has by degrees been extended.

The celebrity of the Ghazeepore perfumes prepared from these roses very soon spread throughout India, and to other countries, while to this day they have been held in the highest possible esteem on account of the permanence of the odor, and the peculiar delicate fragrance of the scent for which they are specially appreciated in the mercantile world. Year after year traders come from immense distances to work temporary distilleries, for the season only, in order to replenish their stock of these delicious and precious rose-scents.

Culture of the Roses, and Plantation of Rose Gardens.—Unlike the propagation of the specimen roses of England, which depend chiefly on grafting, these rose trees are raised from cuttings which are planted out from nurseries after one year's growth at an expense of Rs. 25 per beegah. These slips are watered every five or six days till the setting in of the rains, and when once they have taken root they are finally transplanted to the field intended for the rose-garden. Here each rose tree is planted three feet apart from the other, and

on an average 1000 shrubs are allowed to grow in each beegah of land.

Rose fields are kept scrupulously clean by constant weeding, and loosening of the soil around the roots. This operation takes place about three times a year. Leaf-mould, which is the best sort of manure for roses, is sprinkled all over the fields once a year, and twice a year the fields are irrigated by flooding them with well water. Priming takes place annually in the month of January. The flowering season is in February and March, when the blossoms are picked and collected each day before sunrise.

The average yield of flowers per beegah is from thirty to sixty thousand. These are sold to the distillers at a rate varying from 100 to 125 rupees per lakh (hundred thousand) of flowers. The total area under rose cultivation in Ghazeepore is estimated at about 200 acres, bearing an average rental of Rs. 4 per beegah.

Process of Manufacturing the Pure Attar of Roses.—A gallon, or half a gallon, of the best rose-water is kept in a large copper vessel in the cool night air, with a thin cotton covering over it. Before day-break the oily extract floating over the surface of the water is carefully collected with a pigeon's feather and placed in a phial.

The next day fresh flowers are added to the water, and it is again distilled, and the same process is continued for several days successively, till as much pure attar of roses is collected as is required. The whole quantity thus collected is kept in a phial and exposed to the sun for a few days, and as soon as the watery particles have evaporated, pure oil, or attar of roses is left in the phial, which sells by weight at Rs. 100 to Rs. 125 per tolah. This sort of attar being costly is generally made only to order, and the ordinary quantity produced each year rarely exceeds five or six tolahs. The rose-water left after eight or nine distillations again comes into use, and is sold in the market as the best of its kind. It is, in fact, a clear profit to the manufacturer, who is already amply repaid by the attar itself. The prime cost of a tolah of attar is fairly estimated at Rs. 72, viz. :

Cost of labor,	.	.	.	.	.	Rs.	12	0	0
Value of 50,000 rose flowers, at Rs. 120 per lakh,	.	.	.	.	.	Rs.	60	0	0
Total,	.	.	.	.	.	Rs.	72	0	0

The margin left to the manufacturer after covering the cost of inte-

rest on outlay does not fall far short of forty or fifty rupees per tolah, which it must be admitted is not at all a bad profit on the transaction.

Manufacture of the Alloyed or Ordinary Bazar-Sold Attar.—Sandal wood is well pounded and mixed with water, and then subjected to the usual process of distillation with roses. This gives a greater quantity of oily substance than could be expected from roses only. The same water is distilled over and over again with an additional quantity of fresh flowers as many times as suits the fancy of the manufacturer.

The value of this attar rises in proportion to the number of distillations, and the best of the kind sells at Rs. 10 per tolah down to the lowest rate of Rs. 2 for the inferior sorts. The process of collection of this attar is the same as that of the other, the only difference between the two being in the admixture or not of sandal wood oil.

It is difficult to estimate with any degree of accuracy the quantity of alloyed attar annually produced in Ghazeepore, for a large number of outsiders come every year, stop for the season only, and then carry off what they produce. Probably a maund would be near the mark, but the value cannot be accurately computed, owing to the great variety of rates for the different qualities manufactured.

Manufacture of Plain Rose-Water.—The process is simple, but the varieties are great, according to the number of flowers allowed to each distillation. The ordinary rose-water is sold in huge spherical glass receptacles called "karábás," each containing 14 quart bottles. The average selling price of ordinary rose-water varies from Rs. 2 to 12 per karábá, and English quart bottles from eight annas to eight rupees each.

The usual cost of labor for each distillation yielding 24 bottles is one rupee. During the season numerous temporary rose-stills are worked by traders from different parts of India. Consequently it is very difficult to make even an approximate estimation of the actual quantity produced, but it is supposed to be somewhere between two and three hundred maunds.—*Pharm. Journ. (Lond.), Feb. 7, 1874.*